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FOREIGN BROADCAST INFORMATION SERVICE

JPRS Report

Telecommunications

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CONTENTS

INTER-AFRICAN

New Francophone Paris-Based Radio Station

55000003 London AFRICA CONFIDENTIAL in English 16 Dec 87 p 8

[Passages in italics or boldface as published]

[Text] The Franco-African summit is back on the road again. On the fringes of this year's meeting, at Antibes on the French Riviera, is the unveiling of a Paris-based radio station whereby the more conservative French-speaking governments of Africa can influence French opinion—and above all, that of the important African community in the Paris region.

The new radio station is *Tabala FM,* named after the royal drums of old Africa which announced official news. *Tabala*'s official opening was on 10 December 1987, to coincide with the opening of the Antibes summit.

Tabala's directors are the Franco-Senegalese **Jean-Claude Courant** and a Frenchman, **Jean-Michael Pou du Bois.** The latter is very shy of meeting the press.

Audio-visual media in France are under the control of a *Commission Nationale de la Communication et des Libertes* (CNCL), the grandiloquently-named National Commission for Communication and Freedoms, a body set up by the current Gaullist government of Prime Minister **Jacques Chirac.** Among CNCL members are **Yves Rocca,** in charge of private radio stations, who recently publicly lamented the passing of French **Algeria,** and the illustrious academician **Michel Droit,** formerly General **Charles de Gaulle's** favourite interviewer, known for his robustly conservative views on **South Africa.**

The CNCL gave *Radio Tabala FM* an official licence to broadcast after taking advice from Maitre **Ibrahima Signate,** information attache at the Senegalese embassy in Paris, and from **Julien Adepo,** press officer at the **Cote d'Ivoire** embassy. We also note that the technical adviser at the Ivorian embassy, **Roger Perriard,** who is close to President **Felix Houphouet-Boigny,** is married to **Jacqueline Baudrier,** former president of Radio France and former French ambassador to the troubled United Nations' Educational, Scientific and Cultural Organisation (UNESCO). She is also a member of the CNCL.

The directors of *Tabala FM* have recognised the assistance they are receiving from the governments of Cote d'Ivoire, Senegal, **Gabon** and **Togo,** who have made generous promises of technical equipment.

Doubtless this is why Ibrahima Signate has made such strenuous efforts to get *Tabala FM* off the ground. Although he has denied it, there is abundant evidence that he and **Adama Gueye,** Paris correspondent of the Franco-Gabonese radio station *Afrique No. 1,* the most popular of all French-speaking African radio stations, have interviewed and recruited staff for *Tabala FM.*

/09599

NIGERIA

Microwave System Links Anambra With National Network

53000027 Lagos BUSINESS TIMES in English 18 Jan 88 p 1

[Text] The Nigerian Telecommunications Limited (NITEL) has awarded a contract to Hypertronix Nigeria Limited valued at N13.75m for the provision of 1,300 telephone trunk lines to 13 Local Government Headquarters in Anambra State by microwave technology.

Hypertronix Nigeria Limited has successfully introduced into the country a State-of-the-art Microwave Link telephone technology based upon Time-Division-Multiplex Demand-Assigned-Multiple-Access (TDM-DAMA) techniques.

The System is custom designed to connect telephone and data circuits subscribers in the rural, remote and urban areas to NITEL central telephone exchanges without cable.

By employing a unique technology, the System has been designed to interface with any of the existing exchanges supplied by multi-nationals, from where telephone lines could be taken to places of up to 600 km irrespective of the terrain or landscape of the areas.

It therefore represents an economical alternative to a cable link and comes in very useful where a cable link is not feasible. The Hypertronix System, outside its primary function of providing telephone lines for voice communications, can also interface data circuits for computer modems, etc. as well as telex-gentex services, facsimile transmission and reception as well as coin box facilities among other functions. The Okada Town community as well as the Bendel State University, Ekpoma are already enjoying the Hypertronix Microwave Link Telephone System in the country.

/06662

Call Authorization, Switchboard System Sold to Jamaica

55200021 Ottawa THE OTTAWA CITIZEN in English 8 Jan 88 p D6

[Text] Northern Telecom Canada Ltd. has sold a call authorization and switchboard system to the Jamaica Telephone Company with financing of $2.4 million U.S. from the Export Development Corporation. The system will be used to improve security and billing for public telephone service in Jamaica. Northern Telecom holds a dominant share of the Caribbean telecommunications market and has sold systems to Trinidad and Tobago, Dominica, Barbados, Bermuda and Jamaica with the help of EDC financing. EDC is a Canadian Crown Corporation established to support Canada's export trade. Among other services it arranges financing for foreign buyers of Canadian goods and services.

07310

HONG KONG

One Bidder To Be Awarded License for Cable TV

55400026b Hong Kong SUNDAY MORNING POST in English 17 Jan 88 p 3

[Article by Sa Ni Harte]

[Text] Tenders will be called later this year for a cable television service in Hong Kong, and the sole winner will get a five-year non-exclusive license.

The Government has recommended the issue of ony one license because it feels the territory is too small for more than one cable service.

However, the non-exclusive aspect of the license will allow the Government to keep its options open and issue more licenses later on if the need arises.

The matter is now awaiting approval of the Executive Council for the administration's recommendations on cable TV policy. Tenders should be invited in the middle of this year.

It is understood the administration's decision was reached after consideration of several factors, including the heavy initial investment needed to start the operation.

According to financial information supplied by eight interested contenders in support of their applications for a cable TV license, a heavy outlay would be needed to start a cable TV operation.

A preliminary assessment by a potential investor showed that the capital investments in the first five years amount to more than $2 billion.

The SUNDAY MORNING POST was told that, during the initial years of operation where the market has yet to be penetrated, revenue receivable would not be sufficient to meet overheads.

Financial projections by some potential investors indicated a positive cash flow situation only after five years of operation, and a break-even position after 10 years even if given an exclusive franchise for the service.

The administration also examined the cost of program production in relations with the feasibility of splitting the territory into more than one franchise area.

It found that the possible move would increase the costs of program production on a presubscriber basis.

This is because the number of potential customers in minority groups are already small, so the cable TV operator would be reluctant to produce minority programs in a split market.

Furthermore, the subscriber base in Hong Kong is largely Cantonese-speaking Chinese with a strong local culture. This means a significant proportion of the programs would have to be locally produced and this could be expensive.

In addition, imported programs would have to be dubbed or subtitled in Cantonese and would therefore incur higher operating costs.

The Government accepted in principle the introduction of cable TV in Hong Kong in July last year after considering proposals made by the Broadcasting Review Board.

The Board recommended that the introduction of cable TV in Hong Kong should be allowed on the grounds that the service would be technically and financially feasible to develop and would provide an alternative choice of programs to those of the off-air TV stations.

To assess the private sector's interest in operating cable TV, the administration invited interested parties to submit preliminary proposals for its development.

Submissions were received from Cable Television Hong Kong, a consortium formed between Hong Kong Telephone Company, Swire Pacific, Golden Harvest and Edko Communications; Hutchison Cable Vision Ltd, a consortium formed between British Telecom, Hutchison, Hong Kong Electric and some minority interests; Rover Chua Production House Company Ltd; Hong Kong Satellite CATV Ltd; Reuters; Alpha Omega Broadcast Foundations and China Vision Canada Corporation, which is owned by a Canadian Chinsese operating Chinese cable TV services in Toronto.

Since a broadband cable network, depending on its configuration and design, has the potential capability of carrying a wide range of telecommunication services in addition to the transmission of television program, the possibility of its introduction has therefore raised the question of whether a second domestic telecommunication should be allowed.

The existing one is a narrowband network built by the Hong Kong Telephone Company primarily for the purpose of carrying vocal telephone.

Following a decision by the Executive Council that outside consultants should be engaged to study and report on the technical and economic implications of introducing a second telecommunication network, the Postmaster General appointed a British firm to undertake the consultancy work at a cost of $2.4 million.

07310

Broadcasting Authority Chief Discusses Ownership Issue

Limits on Foreign Control

55400026a Hong Kong HONGKONG STANDARD in English 11 Jan 88 p 1

[Article by Francis Li]

[Text] Legal blocks to prevent Hong Kong television stations—including the proposed cable networks—from falling into foreign control are being planned by the Broadcasting Authority.

But resident foreigners who have lived here seven years could conceivably gain control of Hong Kong stations if the Government accepts the ideas of the chairman of the Broadcasting Authority.

Mr Allen Lee, who is also a member of both the Executive and Legislative Councils, has been chairman of the Television Authority since it was formed as a watchdog body in September.

The Broadcasting Authority has proposed a limit of between 20 to 30 percent for aggregated foreign ownership of the two commercial networks—Asia Television and Television Broadcasts.

And Mr Lee says the future cable television network may be subject to similar costraints regarding foreign ownership.

"I, personally, would like to see some consistency," Mr Lee told THE STANDARD.

A decision on the foreign ownership issue would be made by the end of next month, said Mr Lee.

By local ownership, Mr Lee said he meant ownership by local residents who had been "ordinarily" residing in Hong Kong for seven years.

He said present legislation which stipulated that controlling shares of local television stations should be owned by "British subjects" would be amended to "local residents."

It was proposed that the upper limit of foreign ownership be set at less than 35 percent, as this was a trigger point for a compulsory general takeover offer under the Code on Takeovers and Mergers, Mr Lee said.

"We want to protect the integrity of local ownership," he said, adding that control over television—a very powerful medium—was stringent in many parts of the world.

While admitting that there could be loopholes in the proposed legislation, Mr Lee said if people were willing to go so far as to qualify themselves as local residents, "in principle and in spirit, they have shown a commitment to Hong Kong."

It is widely known that Australian financier Mr Alan Bond, who holds more than 20 percent of Television Broadcasts, is gravely concerned about the authority's move.

Mr Lee noted that authority members would concentrate in the coming months on deciding whether existing television network operators would be allowed shareholdings in the cable television network.

They would also decide what period of time a cable TV licence would cover and whether commercial advertising should be allowed.

Mr Lee said the authority was currently gathering information on the operation of cable television networks in other countries. It was hoped the required new legislation would be ready before September, he added.

He said a report from the British-based consultant Communications Studies and Plannning International on a desirable cable television network for Hong Kong should reach the Government any time now.

The Government has been accused of dragging its feet in inviting tenders to Hong Kong's first cable television network. The idea of such a network emerged about two years ago.

Cable Television Hong Kong (CTVK) and Hutchinson Cable Vision (HCV), are two of the strongest contenders for the cable licence.

CTHK comprises business groups including Golden Harvest films and Hong Kong Telephone. The HCV consortium comprises Hutchison Whampoa, British Telecom, Shaw Brothers films and others.

Mr Lee said in neither the US nor the United Kingdom are television stations allowed a stake in cable television networks. This was to prevent a monopoly of the medium by one or a few powerful companies. There was also the fear of conflicting interests, he added.

In view of the substantial investment involved, Mr Lee said the duration of the cable licences needed careful consideration.

He added that it was a sensitive question whether to allow commercial advertising on a cable network, which survived mainly on private subscriptions.

Discussion of Restrictions

55400026a Hong Kong HONGKONG STANDARD in English 17 Jan 88 p 4

[Article by Francis Li]

[Text] Hong Kong is well known for its laissez-faire policy—active non-intervention, in the words of the Government, particularly in the industrial and commercial sectors.

The policy has brought the territory considerable economic success. It has also become sacred.

Therefore, when the newly-formed Broadcasting Authority revealed late last year its intention to propose limits on foreign ownershp of commercial television stations, including proposed cable television networks, many saw it as having crossed the inviolable line.

Lobbying campaigns were waged by foreigners with business interests in Hong Kong's profitable television industry, and by those eyeing a bigger stake in it.

But is Hong Kong seeking to impose unreasonable restrictions on overseas investors?

Chairman of the four-month-old Broadcasting Authority, Mr Allen Lee, was quick to point out that even the most open society in the world—the United States—had harsher controls over television ownership.

In the US, up to 80 percent of a television network's shares have to be owned by American citizens.

Among other advanced countries, Britain allows no foreign ownership of its television networks, and Australia permits no more than 20 percent.

In Asian countries including Japan, foreign ownership in the television industry—a powerful medium which reaches into the living rooms of both the rich and the poor—is out of the question.

"Hong Kong allows more foreign participation in its most powerful medium than anywhere else in the world," Mr Lee said in an interview with THE STANDARD.

The authority has proposed to the Executive Council that foreign stakes in local commercial televisions networks be limited to something between 20 to 35 percent.

"I think the Broadcasting Authority is very objective in considering Hong Kong an international city to allow a fairly high percentage of foreign ownerships (in local television stations), Mr Lee said.

Australian magnate Mr Alan Bond will be directly hit if the authority's proposal on foreign ownership is accepted.

He recently acquired a 26.77 percent stake in Television Broadcasts (TVB), which became a public company in 1984.

The other local commercial network—Asia Television—is still privately owned.

The licenses of the two commercial networks are to expire at the end of this year. But the Government has already said they will be renewed for another 12 years, up to the year 2000.

But changing political and economic conditions since the licences were issued 14 years ago made a review of the licensing terms necessary, Mr Lee said.

As the new licences will extend well beyond 1997, when China takes over sovereignty, "we must think in the longer term, the post-1997 era," he said.

On the other hand, TVB, the most popular television station, had also changed from a private company to a public company.

"The evolving corporate structure of TVB alone took up four meetings of deliberations.

"We have taken all things into consideration. We are not creating things out of the blue," he said.

Because of 1997, Mr Lee said the present laws, which stipulate that the controlling shares of television stations—51 percent—should be in the hands of "British subjects," would have to be changed. The words "local residents" would have to replace "British subjects."

The existing takeover code affects a mandatory general takeover offer once the 35 percent trigger point is reached. So the upper limit of foreign ownership should be set below 35 percent to protect the integrity of local ownership, said Mr Lee.

The Broadcasting Authority, set up following a two-year comprehensive official review of the broadcasting industry, was prepared to be flexible on the foreign ownership issue.

Mr Lee said members had also taken note of the fact that Mr Bond had a quite substantial interest in TVB.

"I hope when the Executive Council has ruled on the package of proposals (submitted by the authority), everybody will be satisfied," Mr Lee said.

A decision was expected before the end of next month at the latest.

Mr Lee said he had nothing against foreign ownership.

"As long as television is not used as a political tool, I don't care who owns it."

But as it was a powerful medium, there was an inherent risk, which no one could dismiss, if local commercial television networks were to be controlled by foreigners.

Once the ownership controversy was over, Mr Lee said, the authority should concentrate on improving the quality of television programmes.

Three members of the authority, Mr Stan Cheung, Mr Stephen Cheng and Dr Fanny Cheung, chair home viewing groups. Each consists of 30 members of the public—from Hong Kong Island, Kowloon and the New Territories respectively.

07310

JAPAN

High-Bit Telecommunications Link Established With France

55600013 Tokyo KYODO in English
1133 GMT 28 Jan 88

[Text] Tokyo, 28 Jan (KYODO)—Kokusai Denshin Denwa Co (KDD) announced Thursday the inauguration of a high-speed digital leased circuit service with France, effective February 2.

The "high-bit link" will transmit a large amount of information at high speed, using the Intelsat (International Telecommunications Satellite Organization) business service.

The transmission speed ranges from 64 to 2,000 kilobits per second.

KDD said the new service is suitable for large-capacity and high-speed data transmission such as file transmission between computers, high-speed newspaper mat transmission, high-speed facsimile transmission and international television conferences.

The service is now under way with the United States, Britain, Switzerland, Singapore and Hong Kong.

The Japanese charge for the use of leased circuit for 64 kilobits per second is set at 1.42 million yen per month, 384 kilobits for 4.54 million yen and 2,000 kilobits for 12.95 million yen.

/9274

INTER-AMERICAN

Report Backs Private Ownership of TV in Caribbean

55400028 Kingston THE DAILY GLEANER in English 2 Feb 88 pp 22, 24

[Text] Bridgetown, Barbados, Jan 21, CANA—Private ownership of television systems in the English-speaking Caribbean would open new job opportunities and lead to an improvement in programming, according to a new study just released here.

The study, by Canadian communications specialist Evan Browne, was commissioned by the Caribbean Publishing and Broadcasting Association (CPBA) as a first step towards formulating a specific programme to redress the imbalance in regional television favouring foreign programmes.

The Browne report assessed the merits and demerits of private and government ownership of the media, as well as other models in which, not only government and business are involved, but workers and community groups.

But the study seemed to lean towards private ownership of the media, suggesting it would be a "normal evolution" in broadcasting in the Caribbean, and could still be regulated by government through licensing.

The report cited several important benefits of private ownership, ranging from innovation in programming, through economic advantages.

"Privately-owned television stations would not be as likely to succumb to the 'not invented here' syndrome that seems to pervade government-owned stations.

"By acting in an entrepreneurial manner, private broadcasters could assist in the development of local economies," the report added.

"This would increase the numbers of job opportunities, increase the availability of media to local producers and merchandisers who wish to promote their products, and increase the accessibility that local and regional culture would have to Caribbean viewers," said the report.

Financial backing was identified as the main advantage of government ownership.

Declaring that government ownership can provide "a solid financial underpinning," the report said this would mean television stations would have the resources to acquire modern equipment, maintain this equipment adequately, "and provide a reliable and consistent level of service."

The report pointed to the British Broadcasting Corporation (BBC) and the Canadian Broadcasting Corporation (CBC), as examples of government-owned stations that operate successfully in competition with other stations.

"There is no reason why they should not be as dynamic as the private sector in ensuring the production of quality local programming," the report added.

But it nevertheless stressed the advantages private ownership has over government ownership, declaring:

"The point that must be considered is that government-owned stations tend to be resource-driven, while private stations are market-driven.

Government-Owned

"...government-owned stations generally make decisions concerning such topics as programming in the light of the resources that are available—the more resources, the more expensive the programming.

"Privately owned stations, on the other hand, tend to make decisions in a more strategic manner, identifying opportunities and markets that can be developed."

The Browne report also examined other ownership models, and suggested that these could offer some compromise between the extremes of all-government or all-private sector control

The report singled out the ownership structures of Radio RJR in Jamaica and the CARIBBEAN NEWS AGENCY (CANA) as examples worthy of some examination.

It pointed out that in RJR's case, the station was initially part of the British-based Rediffusion group, but its current owners are a complex combination of government, workers, unions, and community groups.

"The resulting Board (of Directors) is not dominated by any one group...and, as a result the station can be said to be 'professionally run' in that management decisions are generally made by the RJR senior staff..." the report added.

The RJR ownership model also results in the station's being run on a business-like, entrepreneurial basis."

"From a public policy viewpoint, this cooperative ownership approach provides the answers to many issues that have been raised. The model ensures development input without government control. It provides for professional management of the facility without meddling from anyone. And it ensures that no one group controls the station," the report said.

It contrasted this with government-owned stations where the report pointed out managers frequently "find it expedient to consult with, and be sensitive to the views of politicians or bureaucrats in government."

CANA's ownership structure was also briefly reviewed in the Browne Report, which described it as representing "a different cooperative approach to the ownership of a media organisation having great potential for influence and power."

The agency's shareholders include some of its own subscribers who are among the major print and electronic media in the Caribbean.

The report also examined arguments both for and against so-called "cross-media ownership" in which one company owned several media houses.

"In support of multiple media outlet ownership is the fact that Caribbean nations are generally small and have relatively small human and capital resource bases to draw upon....

"The argument against cross-media ownership can be stated very simply: the control of a newspaper, a radio station or television station brings power. In the political environment of the Caribbean, is it wise to allow this much power to be concentrated in a very few hands?"

The Browne Study favoured cross-media ownership, noting that many negative consequences can be countered with effective implementation of "effective media policies that includes such instruments as periodical licence review, public service and other conditions applied to the licence...."

"Furthermore, if the level of Caribbean content in programming is to be improved, the resources available to the media will have to be managed and used as effectively as possible. Taken in this context, cross-media ownership restrictions represent an unnecessary constraint," the report concluded.

For and Against

The Browne Report briefly considered arguments for and against foreign ownership of the media, but seemed to favour ownership remaining in the Caribbean.

"The major argument in support of foreign, non-resident ownership is access to capital resources and low-cost foreign programming," it said.

However, it added, the general consensus was that there should be some stipulation that would ensure that ownership and control of the media remain in the Caribbean.

"It is hard to fault this notion, particularly when sensitivity to local and regional requirements is a virtual necessity if local and regional television programming is to be expanded," said the Browne Report.

/06662

BARBADOS

New Relay Stations Enhance Pay TV; Costs Discussed

55400027 Bridgetown DAILY NATION in English 20 Jan 88 p 1

[Article by Sonji Bovell: "Strong STV Signals; New Relay Stations To Improve Transmission"]

[Text] The entire island will be linked to Subscription Television (STV) by year-end when workmen install relaying signals at two more locations on the island.

Meanwhile, the Caribbean Broadcasting Corporation (CBC) has had to reimburse a number of subscribers who have been unable to receive Channel 22 signals since signing up for STV.

A senior employee at the corporation confirmed that CBC repaid the subscribers, but declined to disclose the amount.

However, reports indicate that the new signals are likely to be positioned at Rendezvous, Christ Church, and in the Black Rock area, St. Michael.

A source close to the project, being undertaken by CBC, the island's lone television station, said yesterday the signal at Rendezvous would make it possible for those persons living behind a ridge, as was the case with Rendezvous Hill, to receive uninterrupted satellite transmissions.

Vast Portion Without

The source said that at present the signal was not strong enough to reach a vast portion of the population, but the relay signals would solve that.

According to him all was in place and all that was needed was the equipment, including transmitters and receivers, to set up the relay stations.

At present only those areas in the island in line of sight of the CBC tower at Sturges, St. Thomas, are receiving transmission on the two new channels.

Initial field measurements conducted by the corporation identified areas of strong reception within the parishes of St. Michael, St. Thomas, St. Philip, St. Peter and Christ Church.

The newly-launched Subscription Television (STV) has already cost $6 million.

Prime Minister Erskine Sandiford said last night the money was spent researching, planning and examining the feasibility of the new service.

His comments came before the House of Assembly as he replied to a question posed last October by Member of Parliament for St. Thomas David Simmons.

He said of this sum, $263,000 was spent between January 1, 1986 and May 31 in the same year, while the remainder was spent on the new service up to September 30 last year.

Sandiford told the chamber that the substantial amount spent after May 1986 had been committed prior to that date.

Sandiford said it was the policy of the Government to provide the service to as many persons as possible, subject to the technical limitations of the installation.

He said the CBC board and selected members of management were provided with STV hook-ups as part of the testing of the audio and visual reception in various locations across the island.

He added that CBC staff was offered the service at the public price, but with a 10 per cent discount.

/06662

GRENADA

TV Hopes To Go Islandwide; Shares To Be Sold to Public

55400024 Bridgetown CANA in English
1637 GMT 17 Jan 88

[Text] St Georges, 17 Jan (CANA)—The programmes of Grenada's lone TV station, Discovery Television, are expected to be seen islandwide by the middle of the year, according to Prime Minister Herbert Blaize.

Blaize, in a national address, also told Grenadians his government was still committed to selling shares in Discovery Television.

Discovery now provides limited service for viewers mainly in the St Georges area.

The station is known to be in the process of seeking funds to purchase equipment to carry its signals into the interior of the country.

Late last year, Blaize announced plans to offer shares of Discovery Television, which is owned jointly by government and an American non-profit foundation, to the public.

Blaize said that legislation dealing with the shares would be introduced in parliament "in the near future."

The TV station was set up in Grenada in 1985 to provide coverage of Queen Elizabeth's visit to the island.

/9274

JAMAICA

Government Radio, TV Divestment Behind Schedule

55400025 Kingston Domestic Service in English
1700 GMT 19 Jan 88

[Text] The chairman of the Jamaica Broadcasting Corporation [JBC], Mr (George Abrahams), says the program for the divestment of the JBC has taken another step forward. The divestment of the JBC involves AM radio, three regional stations—Radio West, Radio Central, and Radio Northeast—and JBC Television.

Mr (Abrahams) has sent forms with general and financial information to interested people who have applied for (?owner's) information in the station.

Mr (Abrahams) said draft licenses for commercial AM radio and commercial island-wide television will be sent to applicants by January 29. He said general and financial information forms for AM radio and commercial television should be completed and returned to him by February 26.

Mr (Abrahams) said applicants for (?owner's) participation in the three regional stations will receive their draft licenses by February 12 and their completed forms for general and financial information should be returned by March 11.

Government media divestment policy was formalized on August 12 last year with the tabling of [words indistinct] 39 in the house. The divestment also involves government shares in RJR [Radio Jamaica Ltd]. The original date for divestment of the entities (?acted on) by government cannot be missed and the program is way behind schedule.

/9274

INDIA

Indian Satellite Ready for Transport to USSR

55004705 Madras THE HINDU in English
7 Jan 88 p 7

[Text] The Indian Remote Sensing Satellitte (IRS-1A) is ready to be packed and transported this month-end to the USSR to be launched from the Soviet cosmodrome in the third week of March. This was stated here today by Prof U.R. Rao, Chairman, Department of Space (DOS).

Prof Rao was delivering the 1987 P.C. Mahalanobis Medal Award Lecture of the Indian National Science Academy (INSA), titled "Remote Sensing From Space."

The final acoustic tests were gone through yesterday in Bangalore, Prof Rao said. The satellite will undergo 45 days of pre-launch testing in the USSR which Prof Rao believed would be sufficient.

The IRS-1A is one of the three launches to be carried out by DOS this year. The satellite weighing 1,000 kg will orbit at an altitude of 954 km. In a sun-synchronous mode transmitting data at the rate of 50 megabits/sec. The data receiving stations set up in India for the use of Landsat and spot data will receive IRS data also.

Detailing some of the uses of the currently available data from landsat and spot imagery and our own Bhaskara satellite (though of limited capacity), Prof Rao said data on forest cover had now been accepted by the Forest Department, after the initial controversies of definition were resolved.

About 10 places have been identified as sources for base metals, leads, copper, etc.—and such mineralisation zones will be exploited soon. Similarly areas of Junagadh and Rayalaseema have been mapped for groundnut production as part of the national oilseed mission.

An interesting application of satellite remote sensing has been the attempt to locate suitable sites to rehabilitate the Dharavi slum-dwellers in Bombay. The slum is considered the largest in Asia and the Government of Maharashtra had sought the help of the DOS in its effort to rehabilitate this population.

Active readometry using microwave for all season imaging was likely to be put to use on in Indian satellites by 1995, Prof Rao said.

The IRS data will be linked to the National Resources Management System (NNRMS) which is being executed by the DOS through its 18 centres all over the country. To this will be added five major remote sensing analysis centres in Bangalore, Dehradun, Nagpur, Jodhpur before operational. In addition, the Anna University in Madras, will also have VAX/785 computer system-based centre to develop interpretative methods for the imagery.

The second launch in 1988 will be that of stretched Rohini Satellite System (SROSS) by the Indian Augmented Satellite Launch Vehicle (ASLV-3). The SROSS will carry the stereoscopic scanner MEOSS, a West German payload. It will be recalled that the scheduled launch last year had failed after the lift-off Prof Rao hoped that ASLV would now be launched in April 1988. Besides INSAT-1C is scheduled to be launched by the Ariane Launch Vehicle of the European Space Agency (ESA) in June.

07310

Growth in International Communication Services Noted

55500063.a New Delhi PATRIOT in English
14 Dec 87 p 3

[Text] India's international telecommunications services have registered a phenomenal growth in the past one decade ever since its first intercontinental telephone exchange was commissioned in November 1973 and the international direct dialling telephone service introduced between Bombay and the United Kingdom in 1976, reports PTI.

An example of this growth can be seen in the International Subscriber Dialling (ISD) which had grown from a mere 23-countries link in June 1987 to one of 87 within three months.

According to the action plan of the Department of Telecommunications, subscribers in over 400 cities in India will be able to dial 73 more countries by March 1988 which will amount to a total of 160 countries.

With the expansion of telecom facility, telephone traffic has also gone up. While in the quarter ending June 1986, 247 lakh paid minutes (54 lakh calls) of telephone traffic was handled, the figures for the quarter ending June 1987 was 421 lakh minutes (96 lakh calls).

Direct international telex service was now available to 46 countries on 1,084 channels whereas international telex subscriber dialled service (ISD) was available to 181 countries which meant almost every independent country in the world.

According to the plan, 131 lakh paid minutes (48 lakh calls) of external telex traffic was handled in the quarter ending June 1987 by the Department of Telecommunications.

An important development in the history of India's external telecommunications services was the formation of the Videsh Sanchar Nigam Limited (VSNL) in April 1986.

The Nigam had been entrusted with the task of planning, operating and maintaining all types of international telecommunications networks, systems and services.

They include telephone, telex, message relay, data transmission, facsimile, television, telematics, value-added network services, new business services, maritime and aeronautical communications services and other international telecommunications services which may be developed in future.

/12913

Work Begins on Haryana Remote Sensing Center

55500064a New Delhi PATRIOT in English
9 Dec 87 p 2

[Text] Chandigarh, 8 December—Haryana Chief Minister Devi Lal will lay the foundation stone of the Haryana State Remote Sensing Application Centre (HARSAC) tomorrow at Haryana Agriculture University, Hissar.

Spread over an area of 5 acres, the centre is being set up at a cost of Rs 1.5 crore.

The centre will act as an apex body in relation to remote sensing applications. It will assist various agencies in formulating programmes, build up modern image processing facilities and make them available to various users in the State.

Besides undertaking specific remote sensing application projects and conducting research and development, it will train manpower in the field.

The centre will thus act as an interface between modern technology and the user agencies and participate in the evolution of national natural resources management system (NNRMS) in the country.

The centre will have five major divisions agriculture soil and land use; environment and ecology; geophysical exploration; water resources division and digital image processing division.

It will be fully equipped with interactive computer system, photographic and other testing facilities for analysis and data interpretation.

Most modern digital image processing facilities were also being set up in the centre at a cost of Rs 45 lakhs. With this facility, the storage of satellite imageries into digital signals shall be possible. The stored data can again be converted into an image on graphic system for interpretation purpose.

According to Science and Technology Secretary S.K. Sharma, with the setting up of HARSAC, Haryana has joined the group of few states who have set up such facilities.

This centre will introduce the latest remote sensing techniques for application into various sectors of state economy namely agriculture, soil, water resources, environment, forestry and geo-physical exploration. The remote sensing methods will also cut down cost and time substantially.

HARSAC has already undertaken two important projects in collaboration with space application centre, Ahmedabad and National Remote Sensing Agency of Hyderabad.

One of them is in the area of forecasting crop estimate and the other in the field of identification and quantification of wasteland.

/12913

India Making Progress in Defense Communications

55500066 Bombay THE TIMES OF INDIA in English
18 Jan 88 p 4

[Article by Sunil Narula]

[Text] Mhow (M.P.) January 17—The corps of signals of the Indian army has for the first time used troposcatter communications across the sea for communications between forward troops in Sri Lanka and command headquarters in India.

Added to this is the recent setting up of a satellite transmission and receiving station at Trincomalee along with one at Palaly which was established during the early part of the army operations in Sri Lanka.

It may be noted that the Indian army has been using satellite communications through Insat 1B in the northern sector for communications forces in the Siachen glacier and along the Chinese border.

It is reliably learnt that the Indian peace keeping force (IPKF) is utilising ultra-high frequency communication system over micro-wave towers. It is also using highly sophisticated computer-controlled systems in high and very high frequency bands.

Computers have been extensively used in operations by the IPKF for processing all information.

Till a few decades ago warfare was three dimensional—battles were fought on land, sea and in the air. Lately another dimension has been added, warfare on the electro-magnetic spectrum. This is evident from the Israeli operations in Bekka valley. During the Falklands war electronic counter measures and counter-counter measures were employed extensively.

An important aspect of electronic warfare is the interception of the enemy's signals. Most of the intelligence information in IPKF operations against the Liberation Tigers of Tamil's Eelam (LTTE) was acquired by intercepting LTTE radio transmissions.

The Mecca of this new type of warfare in India is the military college of telecommunications engineering, Mhow where training and research in advanced electronic technology is being conducted. Electronic systems are of two types—communication systems and non-communication systems including radars for surveillance and target acquisition, navigational systems, computers and weapons guidance systems. Jamming of electronic systems is another area where extensive research is being done.

A satellite receiving station which can pick up signals from 16 international satellites including those of the USSR, China, Indonesia and Intelsat satellites is found here. This is used for training purposes.

The Mhow college has been nominated recently by the Union department of electronics for conducting research in fibre optics communication systems. It has been entrusted with a national project by the DOE to study pollution of the electromagnetic environment known in technical parlance as electromagnetic interference. Such interference can disrupt communications completely, a situation which can be catastrophic in a war.

The college has made a breakthrough in developing a mini-fibre optics receiving and transmission set. It is also conducting research in laser communications, computer communications and electronic simulators. The college trains nearly 500 officers and 575 junior commissioned officers and non-commissioned officers at a time.

07310

Separate Agency for Telecommunications Recommended

55500062a New Delhi PATRIOT in English 21 Dec 87 p 5

[Text] The Telecommunication Advisory Committee (TAC) of the Institution of Electronics and Telecommunications Engineers (IETE) has recommended that there should be a separate agency, either in the public or private sector, for the maintenance work of telecom installations, reports PTI.

This would not only help in the proper maintenance of the installations, but also provide an efficient service to the public, convenor of the TAC Virender Mohan Trehan said in the Capital on Saturday while releasing the recommendations of a seminar organised by the TAC in Calcutta this week.

Mr Trehan said TAC was of the view that the mere installation of digital electronic telephone exchanges, as was now being done throughout the country, would not improve the telephone service "as 60 to 70 percent of the faults are due to external factors."

The seminar, fourth in a series, was organised to discuss how to improve the telecom services in the country. The earlier seminars were organised in three different regions of India to discuss the problems facing the telecom sector and how to solve these, he said.

Mr Trehan said the committee also recommended that there should be a built-in maintenance mechanism in all telecommunication equipment. The aim should be to have "preventive maintenance," instead of attending to faults after the equipment had been purchased.

The seminar, he said, stressed that any telecommunication system "consists of three components—installation maintenance and service. The need was to have proper coordination between these.

The seminar also recommended that there should be a standard installation equipment. It said the Department of Telecommunications should issue specifications for the telephone cables and terminal equipment so that these were laid while constructing a building.

For improving the installation of telephones, the seminar made a number of suggestions such as bringing in competition, improvement of existing installations, incentives for better installations, involvement of private organisations, proper and intensive training of the maintenance staff, quality control tests and a code for lasing wires.

It also underlined the need for a maintenance advisory group and modular construction of equipment.

/12913

Plans for New Coastal Earth Station Told

55500067 Bombay THE TIMES OF INDIA in English 13 Jan 88 p 17

[Text] Bombay, January 12—The Videsh Sanchar Nigam is setting up a Rs 16-crore coastal earth station at Arvi, near Pune, which will be commissioned towards the end of 1989, nigam's chairman and managing director, Mr T. H. Chowdary, said here yesterday.

Addressing a news conference here yesterday, he said that the Asian Development Bank is partially funding the project. The main aim of setting up the coastal earth station was to help Indian shipping to utilise the international maritime satellite system with less foreign exchange.

He regretted that out of the 750 Indian ships only 40 were fitted with INMARSAT terminals.

The INMARSAT director-general Mr Olof Lundburg said that his organisation had entered into a contract with Indian Space Research Organisation (ISRO) to study low cost mobile satellite land communication.

According to Mr Lungburg the study had revealed that it could be used for disaster information, railways, law enforcement purposes and health care to name just a few.

He said that INMARSAT which had its roots in maritime communication, would now be expanding to air and land communications as well. "India is a significant member of INMARSAT, but its participation is small. We would like to see increasing Indian participation," he said.

07310

Experts Tell Plans To Improve Telecom Services

Panel Suggested

55500068 Madras THE HINDU in English
13 Jan 88 p 9

[Text] Calcutta, January 12—Mr Satyen Pitroda, Adviser to the Prime Minister on Technology Missions said here today that a suggestion to set up a telecommunication commission had been made to the Centre so that it could study available technology options and recommend measures for establishing a national telecommunication network. After the commission is formed, it should be able to go into this question and submit its report in two or three months.

Addressing members of the Confederation of Engineering Industry (Eastern Region), Mr Pitroda said 250 rural telephone exchanges, each comprising 40 to 50 lines would be set up in 1988-89. "It is proposed to set up one rural exchange a day in villages with a population of 3,000 to 15,000 in the fiscal year beginning April this year," he said. These exchanges would have a substantial indigenous content in terms of technology, design and manufacture of equipment and might involve an outlay of Rs 10,000 to Rs 15,000 per line.

140 growth centres: The Government had identified 140 growth centres for industrial development, and infrastructure would be developed in these areas. For establishing telecommunication facilities Rs 2 crores per area had been allocated. Interconnecting development in 430 district centres was also proposed.

As a result of the deregulation process now on, the private sector was already free to enter areas like manufacture of telephone instruments, data collection and PABX equipment, etc. "The process would continue and we do not know where it would end," he said.

Referring to proposals for independent communication networks planned by some organisations, Mr Pitroda said imbalances and mismatching of systems should be avoided. The proposed telecommunication commission would go into this question and recommend measures to obviate such hazards.

Talking about self-reliance in this field, Mr Pitroda said it was a matter of ideology with long-term perspectives in view. The country had the talent and expertise to develop designs to suit its own requirements and fabricate them. For instance, while microprocessors may have to be imported, the software could be developed indigenously.

Mr Pitroda said the issue was one of developing appropriate technology matching the country's needs and helping it to build a self-reliant economy to accelerate progress.

Integrated Services Digital Network

55500068 Madras THE HINDU in English
10 Jan 88 p 3

[Text] Madras, January 9—The Integrated Services Digital Network (ISDN) would be introduced in the country soon, according to Mr Narayanamoorthy, Director, Telecom Research Centre (TRC), Delhi.

Intended to interconnect a wide variety of terminals, networks and services it basically provides end-to-end digital connectivity and a standard wall plug for digital network access to different network services. Since the ISDN is the technology of tomorrow, serious consideration should be given to its implementation. The existing network is not capable of supporting ISDN. It needs upgradation and introduction of value added services which can overcome the increased cost of this upgrading. Mr Narayanamoorthy said, while participating in the panel discussion organised by the Computer Society of India (CSI-88) here today.

Dr B.N. Jain, Associate Professor, IIT, Delhi was the panel chairman. Mr C.K. Bapiraju of the planning group in State Bank of India speaking as a user, said the banking industry was a very large user of data communications-electronic fund transfers and internal data transmission. The 28 banks in the public sector had 400 regional offices and 40,000 branches transacted on an average messages ranging between six lakhs and one million daily. Approximately the funds transfer ranged between Rs 7,000 crores to Rs 10,000 crores. Twenty percent of the branches accounted for 80 percent of the volume of business transacted and one percent cornered 40 percent of this traffic. Similar phenomenal banking activity was undertaken only in Canada and Australia.

Lack of awareness: The problems faced by the banking sector were too many. The existing agreement with trade unions allowed use of computer for improved remittances, but restricted its use to only head offices. There was

lack of awareness in banks about what could be done. At the same time they had no idea about the tariff that would be charged for using the network. The remark was often made that banks could afford to pay and the public were not much concerned when the banks told them that banks had more money to lend but less funds to spend. At present messages were sent by obsolete teleprinter network. A few voice networks with data capabilities were taking shape, but were likely to be restricted to internal functioning only.

The India-based foreign banks were able to utilise local network capabilities for their international dealings. While PSDN would be ideal for electronic fund transfer and other financial activities (provided the tariffs were all right) the temptation was there to use few dedicated lines for undertaking internal functions. The bank net would be even better if adequate recurity was provided. But above all security aspects should be foolproof, Dr Jain said.

Mr S. Rajendran, Adviser, C-DOT, Bangalore, said that with more advanced business communication equipment entering the market, there was need to educate the subscribers about the facilities available to them through these devices and get a feedback from them, as to what extent the new facilities meet their aspirations. This would help the designers to improve the existing facilities and introduce new ones as per the requirements.

Security of information: Dr N. Vijayaditya, of DOE, Delhi and Dr Chakravarthy, of the DRDO Delhi, emphasised the need to ensure security of information as any laxity in this regard would have serious repercussions on the country's defence capabilities.

Mr S. Padmanabhan of ITC, Calcutta, said multi-sector industries felt the need for adequate data communications network since they were operating in a competitive environment. Any network should be such as to promote speedy and accurate order processing, follow up schedules of delivery and service, customer billing, recovery of dues and providing updated information to aid marketing efforts.

Mr P. Jayan, Air India, said the Government of India should permit the private sector to manufacture equipment required for the successful operation of data communication network.

Dr S.V. Raghavan, Chairman, Programme Committee, welcomed the panellists. Mr M. Srinivasan, panel coordinator, proposed a vote of thanks.

07310

Resentment Over Import of Dish Antenna

55500065a Madras THE HINDU in English 17 Dec 87 p 9

[Text] Panaji, 16 December—While Indian scientists are all set to build the world's largest and totally indigenous radio telescope at Khodad, near Pune, a total contradiction defying all logic prevails at Arvi, barely 15 km from Khodad.

The Ministry of Communications is pushing through its scheme of importing and installing a 32-metre dish antenna at Arvi for overseas satellite communication much against the advice of Prof Govind Swarup, the chief architect of the Udhagamandalam (Ooty) radio telescope and the proposed Pune project called the Giant Metrewave Radio Telescope (GMRT).

Talking about the GMRT here on Monday, Prof Swarup, a senior professor at the Tata Institute of Fundamental Research who is here to attend the international conference on gravitation and cosmology said: "It is happening right next door and it makes my blood boil."

The construction of the Udhagamandalam telescope, the largest radio telescope in Asia, between 1966 and 1970, generated indigenous capabilities in antenna design and fabrication as an offshoot. The agency which gained this knowhow was the Electronic Corporation of India Ltd. (ECIL), a public sector undertaking under the Department of Atomic Energy (DAE). This expertise evolved from basic sciences has made several marks in telecommunication applications in the country.

There is a 29.6 metre diametre indigenously built dish microwave antenna at Arvi, which was set up in 1968-70.

Then also the Ministry had wanted to import the system but was turned down by Prime Minister Indira Gandhi on being told by Prof Vikram Sarabhai, on Prof Swarup's assurance that it could be done in India.

Indigenously built antenna of 15-20 metres diameter have been installed at various places in the country. Though the Udhagamandalam telescope is a big achievement, the GMRT would be an even bigger one.

So, why is the Ministry of Communications interested in importing the 32-metre antenna from Mitsubishi, Japan?

Three years ago when the Ministry decided to put up the new antenna, Prof. Swarup had offered to design and fabricate it within 27 months. The Japanese firm has offered to do it in 18 months.

"This is a new design and we would have had to start from scratch. Considering this, our projections were not unreasonable" says Prof Swarup. "Harping on the issue

of 18 months and making a case for extreme urgency, the Videsh Sanchar Nigam (VSN) has managed to have its way, thus scuttling Indian efforts."

Prof Swarup said his attempts to bring this to the notice of Mr K.P.P. Nambiar, Secretary, Department of Electronics, the ECIL, and secretaries of other scientific departments brought only platitudes and sympathies.

"It is thoroughly demoralising: why should one continue working" asked Prof Swarup who is not just a renowned radio astronomer but also a passionate advocate of indigenous efforts on all fronts of scientific and technological activity.

/12913

Reporter on State of India Telecommunications

55500069 New Delhi PATRIOT in English 9 Jan 88 p 5

[Article by M. K. Kaul]

[Text] Have you applied for a telephone connection in Delhi, or for that matter, any other major city of the country, under the "general category" tab without a 'god father' in the government? You may well forget it. For, as things stand today, the telephone will be yours only around the much-bandied 21st century.

A year or so ago, there were a million people waiting for a telephone connection and, the authorities admit, the queue must have lengthened further. That means your wait for the much wanted telephone will be longer.

In a country, with a population of 800 million, there are about 3.3 million phones or roughly there is one telephone connection for 250 people, which is woefully inadequate compared to any developed country. What is worse is that the telephone distribution system in the country is oriented towards urban and where not more than 30 percent of the population live.

In 1984, for instance, India had three million telephones. Of them 2.7 million or 90 percent, were in urban areas. The ruralites had to make with 10 percent of the remaining connections. In other words, there are nearly 2,000 people dependent on a single telephone connection.

Against this backdrop what appears paradoxical, is that "telephone density is low and traffic high," which is quite the opposite of west. It means the Indian telephone system is far more overloaded than the western one. The result is that the Indian system conks out far more easily.

A year ago, it was estimated officially that the average fault rate in the Indian telephone system was around 35 percent per month, "which is almost 10 to 12 times of that obtaining in some of the better networks abroad.

Another criterian to judge the efficiency of the telephone network is the maturity rate of telephone calls. Not a single Parliament session passes without MPs complaining against the telephone system. Once even a Communications Minister had to admit that "even his telephone had remained out of order for quite a few hours." And mind you this is the situation when the success rate of local calls comes to over 90 percent. The chances of subscriber-telephone diallers getting a call through are just 20 percent.

The Telecom Mission, which forms one of the five "National Missions," has brought out use high and low points of the Indian telephone network in a draft which was submitted to the government a year ago. Dr Sam Petroda, who is the scientific adviser to the Prime Minister, in fact, recognised the merits and faults of the Indian telephones and was instrumental in bringing out the first ever draft of the Telecom Mission with the aim to improve the system.

Mr Rajiv Gandhi was quick to realise the significance of the telecommunication system and in January 1986 itself, agreed to include Telecom among the National Missions with the objective of 'customer satisfaction'.

The two main objectives of the Telecom Mission are:

— a substantial improvement in the quality of existing service, and

— reduction in the waiting periods for services and extension of services to rural areas.

They say it is money which makes the mare go. And telecommunications, which is highly capital-intensive, has all the more need of funds which, somehow, has eluded it. What let us see the Telecom Mission has to say about the seventh Plan allocations for the communication sector.

"The seventh Plan allocation falls significantly below the requirements", says the Mission. What is more important it warns that at the end of the Plan period the queue for telephones may only lengthen instead of shortening.

If there is a will, there is a way, goes the old dictum. It holds good for telecommunication too. This has been demonstrated in the Telecom Mission's short-term proposals to bridge the yawning gap between demand and the supply of telephone connections.

"It was felt that it is not only desirable but possible to attempt and achieve tangible improvement in the quality of service to the existing customers within the resources made available to the Department of Telecommunications in the seventh Plan through commitment on the part of the staff, and selective use of modern technology and special inputs in selected areas of the network", says the Telecom Mission draft.

To improve accessibility of telephones, it has been proposed to step up the provision of public telephones and promotion of use of group PBXs. In fact, these two aspects have been adopted as "basic components" of the Mission: Better Communication", at the preliminary stage instead of getting bogged down on account of inadequate plan allocation.

What has been the bane of Indian telecommunication, or even other high tech sectors, is the indiscriminate import of foreign technology. Dr Petroda, who came back to his motherland around 1981, has been zealously advocating "self-reliance"—the slogan Jawaharlal Nehru gave at the dawn of independence knowing fully well that India can never survive as an independent country in a world of conflicts and vested interests without being self-reliance. It is for this reason that among the important components of "better communication" has been included "concentrated attention to indigenous development of certain selected technologies and products".

The Telecom Mission draft succinctly sums up the state of affairs regarding foreign technology import for the telecommunication network. It says: "In the past our policies and programmes have been geared up towards:

— technology imports

— product purchases

— manufacturing plants

— centralised administration.

This led to the purchase of mismatching technologies, most of which had already become obsolete by the time they were exported to India. The result was that the country was flooded with such outdated technologies as Pentaconta crossbar. Another thing that happened on this score was that the country's network got ignored from the view point of:

— data base

— maintenance

— administration

— standards

— commonality

— connectivity

For any good telecommunication network, is the above five are must. For instance, because of mis-matching and varied kinds of borrowed technologies, there is no commonality of equipment among the telephone exchanges in the country. So much so even in acity, where more than one exchange is in operation, two technologies may never match.

All these technologies, as Petroda is wont to say, are just "transplants" of the multinationals which, he warns, are not interested in transfer of technology. As a result, just within a span of three to five years India is in search of foreign technology vendors who always lurk around the corner looking for purchasers, ney victims.

It not only proves as drain on the foreign exchange resources of poor tion like India but also inhibits local talent. Dr Petroda's nurtured public sector Centre for Development of Telematics, or C-DOT, has proved to the hilt that what foreign scientists can do the Indians can do better.

However, as the Telecom Mission avers, no scientific breakthrough can be achieved by mere wishing. It needs sustenance and applause from the lowest and the highest. "Let us commit mistakes...but let us do something " is the motto Dr Petroda gave to his brain-child C-DOT.

07310

PAKISTAN

Telecommunication Advances Reported

55004706 Lahore THE PAKISTAN TIMES in English 3 Feb 88 pp 6-7

[Article by Alauddin Masood]

[Text] A dependable and efficient communication system plays an important role in the socio-economic development of a country. The more proficient and developed the communication network, the more developed a country would be.

Recognising the importance of communications, particularly the telecommunications, the developed countries have established sophisticated and economical communication systems linked not only to every nook and corner of their own lands but the world at large. Resultantly, their citizens can contact people or agencies, both at home and abroad, just in a matter of a few seconds. The picture is not that rosy in the Third World where many countries, particularly their countryside, still lack a dependable telecommunication system. Resultantly, in some cases it takes days to convey even important messages from one place to the other.

Telecommunication now occupies such a pivotal position that some economists regard it as a key with which one can open the door to every field, including economic development.

The experts maintain that an organisation can save four percent of its income if it spends just one or two percent on telecommunications. This explains why the developed countries spend colossal amounts on the development of their telecommunication infrastructure.

A report in "Times said that out of dollar 100 billion spent on telecommunications every year dollar six billion were spent in developing countries although they need to invest about 25 billion annually. [quotes as published]

Apart from the purely economic advantages, telecommunication makes a tremendous contribution towards promoting peace and understanding and in giving access to technology and spreading awareness.

Despite the ever-increasing importance of telecommunications one was pained to note a widening gap between the developed and the Third World countries in this vital field as well. Whereas the Western world possesses some 90 percent of world telephones and it was looking forward to be more elaborate information system, the Third World was still struggling with the century old telephones, open-wires and manual switch-boards.

The developed countries now seemed to be mostly interested in the Integrated Services Digital Network (ISDN) which includes provision of voice, data and picture transmission facility to the subscriber on the existing network, the developing countries continued to grapple with the issue of threadbare telephony for its clients. The cellular mobile telephone service was another areas where the West was concentrating more and more; while for the developing countries the emphasis remained on selection of technology for meeting the demand in villages economically and efficiently.

Chart indicating, year wise, increase in telephones

Year	Telephones
1949-50	14,276
1959-60	60,116
1967-68	129,160
1968-69	140,975
1969-70	148,962
1970-71	169,103
1971-72	167,200
1972-73	184,103
1973-74	201,354
1974-75	227,604
1975-76	249,300
1976-77	274,647
1977-78	294,161
1978-79	314,000
1979-80	336,275
1980-81	358,815
1981-82	388,360
1982-83	414,000
1984-85	529,370
1987 (December)	679,000
1988-93(Projected)	1679,000

As elsewhere, telephone has become a necessary tool for the business trade, industry and commerce in Pakistan. Though considered a luxury and status symbol till the sixties, telephone is now becoming an essential appliance of an ever-increasing number of households. The Government agencies are no longer the major beneficiaries of the telecommunication services; rather the major and the bulk of the consumers happen to be the people drawn from all segments of the society.

This explains tremendous growth in demand for telephone connections and other services offered by the Telephone Department. Despite rapid development and manifold increase in the network, the demand far exceeds the availability, i.e., the supply. Naturally, the people have to wait, which is quite painful for the public and a major cause for their complaints. At the close of the year 1985, there was a backlog of over 500,000 applications for new telephone connections in the urban areas; while the rural areas generally lacked such facilities.

Such was the state of affairs when the Prime Minister Mr Mohammad Khan Junejo announced, on 31st December, 1985, his historic five-point programme for the rapid socio-economic development of the country, particularly the rural areas. As regards the telecommunication sector, the salient features of the programme include development of facilities within the country to manufacture sophisticated equipment/spares and to accelerate the expansion of telephone facilities to the rural/underdeveloped areas of the country and to modernise and improve the services.

In line with the objectives of the five-point programme, the Telephone Department has not only considerably toned up its services, it was endeavouring to make its services available to the people living in the countryside. As a result of the dedicated efforts, the total number of telephones which stood at 529,370 in June 1985 rose to 679,000 at the end of December 1987 in turn pushing up the telephone density to 0.67 per 100 persons from 0.51 per hundred person in June 1985.

Since January 1986, the Islamabad Telecommunication Region alone has provided 20,000 new telephone connections raising the number of consumers in the Islamabad Region to 56,000. It is planned to raise the existing network in the Region to 64,000 by June 1988.

The Seventh Five-Year Plan (1988-1993) envisages to raise the telephone density to 1.3 telephone per 100 persons by providing one million new connections to the consumers. The project was expected to cost Rs. 37.5 billion. By the turn of the century, it was proposed to raise the telephone density to four sets per 100 persons.

Telephone Density

Year	Ratio per 100 persons
1977-78	0.38
1984-85	0.51
1988-93 (Projected)	1.30
2000 (Projected)	4.00

One cannot fully appreciate the rapid strides made by Pakistan in the sphere of telecommunications until one compares the progress in this sector to the infrastructure inherited by the country. In 1974, Pakistan had hardly any services worth the name. The then biggest city of Pakistan—Lahore—had only 3500 telephones while Karachi had 2500. The facilities in the rests of the country were almost non-existent. Most of the areas had magneto telephone exchanges mainly for defence purposes. At other places, only small normal exchanges existed. the total number of exchanges in the country in 1947 was 64 which increased to 962 in June 1985.

Telephone Exchanges

Year	No.
1947	64
1978	667
1984	873
1985 (June)	962

The Government of Pakistan reorganised the telecommunication services speedily and took steps to rehabilitate the old submarine cables between Karachi and Muscat, which had been interrupted during the World War II, and to open direct radio circuits.

Over the years, the telecommunication services in the country have made rapid strides, from 3 channel open-wire system to wide-band satellite and multi-channel microwave systems, from the old out-dated noisy telephone exchanges to semi-electronic and direct dialing systems and from the conventional Morse telegraphy to the modern telex and gentex system.

The number of telephones has increased by 37 times since 1949-50, the year when the country was able to rehabilitate and reorganise its infrastructure, as was borne out by the statistics. (The country had 14,276 telephones in 1949-50 while the figure at the close of the year 1987 stood at 529,370.)

The development in telecommunication technology itself all over the world has been very fast, making it possible to build complicated and highly sophisticated electronic networks. Pakistan has not lagged behind in making use of the advanced technology.

The telecommunication manufacturing industry in Pakistan has an out-turn of about Rs. 1000 million. Major industries include Telephone Industries of Pakistan which has a share capital of Rs. 9.9 million. It manufactures telephone instruments, exchange equipment and teleprinter machines. The facilities in the factory are being expanded and it has entered into an agreement with a German multi-national to modernise its production lines to include digital exchanges. The factory is being equipped to manufacture 100,000 digital telephones annually.

The other factory—Carrier Telephone Industries of Pakistan (CTI), specialises in transmission equipment and it was established in 1969 in their collaboration with M/s Siemens of West Germany. The German firm holds Rs. 7.3 million (47 percent) of the share capital and the Government of Pakistan Rs. 8.3 million (53 percent). CTI is one of the leading electronic concerns of Pakistan and it has an annual production capacity of 10,000 analogue (fourth generation Muxusing filters) and 20,000 digital multiplex channels with associated equipment and a mix radio system and telex/data transmission system.

Both the factories are exporting some of their products to a number of foreign countries. Efforts are being made to further expand the export of telecommunication equipment.

The Government also invited proposals for another factory in the private sector to bring another version of digital know-how in the country. Recently, a cable factory has come up in the private sector. Small electronic PABX manufacturers have also entered in the field.

Manufacture of telecommunication equipment is likely to get a great boost from the decision of the Government to start a gradual production and deletion programme.

Revenue and Expenditure Statement

(Rs. in million)

Period	Receipt	Expenditure
1949-50	25.00	17
1954-55	17.00	26
1959-60	83.00	54
1964-65	152.00	102
1974-75	50.71	33.60
1977-78	109.00	66.00
1980-82	220.85	95.36
1986-87	400.00	1700.00

Figures up to 1970 include those of former East Pakistan (now Bangladesh) also.

Currently, Pakistan was earning about Rs. 3700 million per year while it was spending about Rs. 1700 million annually. If we wish to narrow the gap with the developed countries in this vital sector we have to re-invest the total earning from this sector, at least for five to six years. The additional input would have a snowball effect and it would result in manifold increase in the direct

revenues while the indirect benefits in the shape of accelerated development in other fields will be of a much larger magnitude. Probably, with this end in view and to further improve the efficiency of this sector, the Federal Cabinet recently approved, in principle, a proposal to convert the T&T Department into an autonomous statutory body to be known as Pakistan Telecommunication Corporation.

/9274

Broadcast Abilities Examined

55004704a Karachi DAWN (Supplement) in English 4 Jan 88 p X-XI

[Words in boldface as published]

[Text] The night was cold and the surroundings rather quiet. The studios were located in a peaceful locality in a barrack away from the hubbub of the city which was not as sprawling and huge as it is now. Except for the producer and the officer on duty who used to sit in the verandah having a bamboo curtain to protect them from the cold, biting winds of the Arabian Sea yonder, no one was visible. Razzaq, the peon on duty and the Engineers were in one of the rooms of the barrack adjacent to the studios. **Danishkada**, an unusual prestigious programme was on the air with (late) Shahid Ahmed Dehlavi, Editor of *aqi* as the quiz master. The scholarly participants were Dr. Mumtaz Hasan and Qazi Ahmed Mian Akhtar Junagadhi.

The programme was running smoothly when all of a sudden pandemonium was let loose on the other verandah which was on the other side of the studio now on the air. There, a bitch with her four chubby puppies was having a blissful sleep perhaps dreaming of bones of all sizes and varieties, oblivious of the intellectual discussion next doors in the studio when suddenly someone threw a handful of pebbles on it and her puppies. What happened next can be easily visualised. Since the temporary studios were not sound-proof in those days, the howling of the dog and the wailing of her startled puppies went on the air in the background of **Danishkada!**

I can still recall what I witnessed that night. It was both shocking and hilarious. The late Mr. Asnain Qutb, the then Station Director and his Assistant Directors rushed out and started running hither and thither to drive away the bitch and her agitated young ones from the scene which complicated matters further. Small fries like me had to lend a helping hand. The only person who looked calm and composed in those mad moments was Nasrullah Khan, the well known columnist, author, satirist and humorist who was then a producer in Radio Pakistan. I can never forget to this day the sweet, mischievous smile on his lips!

As I try to recollect such events from my past, I feel that I can also never forget those early pioneering days when Radio Pakistan, Karachi, used to broadcast from temporary studios set up in one of the barracks of Intelligence School, New Queens Road (now Moulvi Tamizuddin Khan Road) where the entire staff beginning with Station Director, Qutb to our favourite peons, Razzaq and Boota Khan, belonged to a close-knit family, all determined to face hardships and stick to our duty even in the worst of the weather, come what may. Due to its proximity to the Ocean, the soil in the compound of the barracks used to ooze water at night, often giving one the uncomfortable feeling that some supernatural being had sprinkled water over the area. Since all the offices were in tents, no one was safe from the periodic sandstorms which used to cover us instantly and engulf us completely and in the evening made us look like gravediggers! Despite these discomforts, people rarely went on leave, willingly worked from early morning till late at night and were ever ready to assist each other whenever in trouble or in some emergency.

Gone are those golden days. Compared to what Radio Pakistan had inherited in August, 1947, the babe of those days has grown into a powerful giant. It may be recalled that in spite of the impressive post-war developments in the field of broadcasting which had made All India Radio's network large, Pakistan inherited only three radio stations having only medium wave transmitters, at Dhaka in the then eastern wing, and at Lahore and Peshawar in the western wing. The strength of Lahore's transmitter was only 5 KW and that of Peshawar's 10 KW. Karachi, the then capital of the new country, did not have one.

Karachi went on the air for the first time on 14 August 1948, with a baby transmitter with a radius of only a few miles. Soon it had two transmitters, a medium wave of 10 kilowatt and a short wave for centralising the news. The present spacious Broadcasting House on M.A. Jinnah Road having modern facilities was inaugurated by the first Prime minister of the country, Khan Liaquat Ali Khan on 16 July 1951.

Today, Radio Pakistan has sixteen broadcasting stations spread all over the country with several more in the offing. It has transmitters whose strength ranges from 0.25 KW at Faisalabad, Gilgit, Khuzdar and Turbat to 1,000 KW at Islamabad which has one of the largest, well-equipped broadcasting complexes in the subcontinent. In addition, sensitive cities close to country borders, like Peshawar, has a 300 KW transmitter and Quetta, a 150 KW one, followed by Multan which has a transmitter of 120 KW strength. Lahore, Khairpur and Karachi broadcast their programmes via 100 KW. Some important stations like Karachi have begun to use second channels too. Due to these facilities, both the day time and night hour service area which varies with the season, has also increased manifold, covering 95 per cent of our population and 75 per cent of the area with programmes in Urdu and also in all regional languages.

So far I have talked only of medium wave transmitters which are used to broadcast programmes in Radio Pakistan's Home Service for mainly listeners within the country. Its External Service and World Service, one for foreign listeners and the other mainly for Pakistanis living abroad have the facility of several powerful short wave transmitters to deliver Pakistan's signal loudly and clearly on vast areas of the globe at times which are suitable to listeners there. For the broadcasts from the External Service, some of the major languages of the world are used, spoken by native qualified speakers who are on Radio Pakistan's large staff.

Pakistan was fortunate that a large number of talented senior officers were there in All India Radio, beginning with Syed Zulfiqar Ali Bukhari, Rashid Ahmed, Sajjad Sarwar Niazi, Mahmood Nizami, N.M. Raashid, Agha Bashir Ahmed, brother of Agha Abdul Hameed and Zubaida Agha, the famous artist; G.K. Farid, Asnain Qutb, Syed Ansar Nasri, Hafeez Hoshiapuri to many others. When Pakistan came into being, they opted for Pakistan. Thus the new country inherited a fairly large group of brilliant broadcasters who brought to the medium their vast experience of running radio stations in some of the largest cities of the subcontinent. They and their equally brilliant lieutenants were all professionals for whom the medium was a sacred trust, not a means to exploit or use to gain one's selfish end.

Since Syed Zulfiqar Ali Bukhari was the senior most, he became Radio Pakistan's first Controller. The title was changed later to that of the Director General.

After Mr Bukhari's retirement, Mr Rashid Ahmed became the Director General. He had brought with him a rich experience of both teaching and broadcasting. One of the best scholars the Radio ever had at the helm of its affairs, he was not allowed to continue for a long time in this post. His transfer came as a real catastrophe for the medium. This was the first terrible blow to this medium of mass communication by the bureaucracy through a policy decision according to which any bureaucrat heading any federal ministry could be made the Director General of Radio Pakistan and rule over the destiny of the country's great artistes, scholars and musicians.

Although the medium continued to grow steadily, it began to lose listeners fast because radio stations from neighbouring countries took full advantage of the mess here and started beaming spicy, sensible and entertaining programmes towards Pakistani listeners. With no TV in the country, listeners did not have any alterative. Even the marvelous facilities of Radio Pakistan's Transcription Service which later came to be known as the **Central Production Unit** failed to make the masses listen to Radio Pakistan's programmes more than the broadcasting from foreign lands.

This went on for over two decades. It is fortunate that now, after so many years, Radio Pakistan has a Director General who is professional and who seems to be fully conscious of the mess which most of his predecessors had left for him. This is evident from the improvement which I have observed in the quality of most programmes.

Due to the fascinating lure of television, listening to radio in urban areas has decreased considerably during evening hours.

Radio Pakistan's loss has been most in the field of drama. Due to TV's glamour, better rate of payment and wider viewing facilities and impressive exposure, most radio artistes and writers have now almost abandoned what may be considered their alma mater, the institution which had trained them initially.

Before I close, a few lines about the tremendous progress which Radio Pakistan has made in recent years in the field of engineering. Till as late as the sixties, Radio Pakistan had to depend a lot on foreign engineering concerns for all their equipment. But now, thanks to the capabilities, skill and the dedicated hard work and zeal of a small group of talented engineers, Radio Pakistan has begun to produce most of its equipment, even the most sensitive ones, like powerful transmitters. Isn't that an achievement the entire nation should be proud of?

PTV—CENTRES AND TRANSMITTING STATIONS

PTV-Centres and Transmitters	Power Output (Kw) ERP	Channel Number	Date of Entry into Service	Population Covered i, ii (Million)	Area Covered (Sq. Km)	TV Setcount iii	Average Total Viewership
PTV-LAHORE CENTRE			26.12.64	32.66	87,782	538.490	4,315.920
Lahore Transmitter							
Lahore Transmitter	100	5	29.12.68	8.64	9,065	295,260	2,362,080
Shuja'abad Transmitter	178	8	23.03.75	6.66	14,000	61,950	495,600
Sahiwal Transmitter	277	10	05.03.77	5.35	19,700	33,390	267,120
Jamal Din Wali Transmitter	200	10	01.03.79	4.05	20,700	12,915	103,320
Faisalabad Transmitter	20	6	25.08.80	8.20	18,234	90,720	725,760
Pasrur Transmitter	6.8	10	20.03.83	3.91	15,200	45,255	362,040

PTV—CENTRES AND TRANSMITTING STATIONS

PTV-Centres and Transmitters	Power Output (Kw) ERP	Channel Number	Date of Entry into Service	Population Covered i, ii (Million)	Area Covered (Sq. Km)	TV Setcount iii	Average Total Viewership
PTV-RAWALPINDI-ISLAMABAD CENTRE**			15.01.67	20.98	89,625	292,383	2,339,064
Murre Transmitter **	180	8	23.03.69	11.19	43,000	243,915	1,951,320
Sakesar Transmitter	114	4	08.07.73	9.63	43,000	34,020	272,160
Thandiani Transmitter	5	6	07.08.76	0.148	3,625	14,070	112,560
Mangla Transmitter	0.2	6	15,09.83	0.004	07	378	3,024
PTV-KARACHI CENTRE			02.11.67*	19.47	66,890	537.951	4,303,608
Karachi Transmitter	60	4	02.11.67	6.09	10,360	421,926	3,375,408
Thana Bula Khan Transmitter	205	9	02.06.73	6.21	17,100	65,935	527,480
Shikarpur Transmitter	213	8	14.06.76	4.05	19,700	35,705	285,640
Nurpur Transmitter	170	5	06.06.78	2.91	19,700	14,385	115,080
Tando Allah Yar	10	11	23.03.86	0.206	30	***	***
PTV-QUETTA CENTRE			26.11.74*	0.914	12,026	17,026	136,208
Quetta Transmitter	1.25	8	26.11.74	0.40	2,600	12,164	97,312
Lak Pass Transmitter	8	4	02.03.77	0.26	3,367	2,184	17,472
Sibi Transmitter	6	6	18.03.82	0.15	3,239	2,468	19,744
Ghazaband Transmitter	10	5	21.11.85	0.10	2,820	210	1,680
PTV-PESHAWAR CENTRE**			05.12.74	5.72	19,295	49,760	398,080
Cherat Transmitter**	170	10	25.08.73	4.46	14,500	47,672	381,376
Razmak Transmitter	0.25	6	02.12.81	0.28	4,600	1,990	15,920
Mangora Transmitter	10	7	25.08.85	0.15	07	58	464
Morasar Transmitter	0.01	5	17.10.85	0.80	170	08	64
Chitral Transmitter	0.10	9	29.10.85	0.03	18	32	256
5 Production Centres and 24 Transmitters i. The total coverage is not the sum total of figures against each transmitter as there is some overlapping in coverage ii. Based on 1981 Population Census Report plus 3 percent growth rate per annum up to mid 1986 iii. Estimated setcount as on 30.06.1986				79.626 million or 81.979 percent of the total population in the country	275,618 Sq. Km. or 34.62 percent of the total area of the country (excluding the disputed territory of Jammu & Kashmir)	1,436,610	11,492,880

*The TV Centre's inauguration date
** Connected by S T link
***Under finalization

/12913

TUNISIA

New Law Permitting Satellite Antennas Passed

London AL-DUSTUR in Arabic 25 Jan 88 p 5

[Text] Tunisia became the first Arab country to permit its citizens to legally use television equipment receiving stations which broadcast via satellite. The promulgation of this new law will enable Tunisians to set up special antennas to receive international television programs, including those from the USSR and the United States. This matter motivated a number of media people in Tunis to request a law permitting private radio broadcasts.

EUROPEAN AFFAIRS

EEC Wants More Control Over RACE Program

5500A009 Amsterdam COMPUTABLE in Dutch 13 Nov 87 p 7

[Text]Brussels—The 1.2-billion guilder EEC contribution to the RACE telecommunications program might be withheld because of a weird dispute about the committee to head the program. The European Parliament threatens to withdraw subsidies because it wants the EC Commission to have more control over the program's management.

It also demands a committee structure in which the governments need a majority to block Commission proposals. The governments, however, want to obtain the right to accept projects by majority vote which were previously rejected by the Commission. Amadee Turner, a British member of the European Parliament and science spokesman, commented: "There is still enough room left for the Commission to reach a compromise within the framework of the regulations. I find it hard to believe that all 12 members would oppose a possible solution."

Some governments are surprised at the Commission's stance on this issue. No funds can be released as long as the European Parliament continues to veto the financing of a number of projects already approved on scientific grounds, and the projects will be delayed. Indeed, RACE is already behind schedule because of previous delays.

If Parliament stands firm at the November meeting, all governments will have to oppose the proposal to have it dismissed. However, Parliament might decide to cancel the vote and RACE would then be delayed even further.

25039

EC Plans for Commercial Database, Information Service Market

5500A018 Luxembourg ECHO NEWS in English No 3, 1987 p 3

[Unsigned article: "Commission Reveals Plans for Developing a Community Information Services Market"]

[Text] The Commission has just approved the text of a Communication to the Council, together with a draft Decision, in which it sets out its plans for stimulating the development of a Community information services market.

These plans are the result of a series of studies and consultations with information suppliers, users and representatives of national administrations following the endorsement by Council on 18 March 1986 of a work programme for creating a common information market. Four principal objectives have now been defined, which the Commission sees as an integral part of the overall effort to achieve the large European market: - to establish an internal information services market by 1992; - to stimulate and reinforce the competitive capability of European suppliers of information services; - to promote the use of advanced information services in the Community; - to reinforce the joint efforts to achieve the internal and external cohesion of the Community with respect to information services.

These objectives imply complex action in a number of areas. To advance these with the necessary flexibility, the Commission has drawn up an action plan to be implemented in two stages, the first consisting of a preparatory phase lasting two years, with a budget of 15 million ECU for the first year, 1989, and 20 million ECU for 1990.

During the preparatory phase the Commission will carry out a number of priority activities. It will, for example, set up a European information market observatory to provide intelligence about the information market. It will seek ways to eliminate technical, legal and administrative barriers to information flow and at the same time endeavour to improve the conditions for transmitting and accessing information services. It also undertakes to enhance the synergy between the public and private sectors and to launch a number of pilot and demonstration projects with participants from the private sector to stimulate the development of the information industry. Among areas for special attention will be the library sector, the reinforcing of activities in support of users and the promotion of European information services, in coordination with the Member States.

During this preparatory phase the Commission will evaluate the results obtained and use them to present to the Council specific proposals for the further implementation of the different components of the action plan.

Tele-X Future Still Facing Many Uncertainties

Cable TV New Challenge

55002426 Stockholm DAGENS NYHETER in Swedish 12 Nov 87 p 12

[Article by Kaa Eneberg]

[Text] Turku—The long-planned Nordic TV broadcasts via the Tele-X satellite are never going to become a reality. Instead, the satellite, which will be launched in 1988, will be put to another technical use, and Nordic TV viewers will turn increasingly to cable TV.

That conclusion is being drawn by several Nordic MP's following the Nordic Council's minisession, which ended in Turku on Wednesday. The council discussed the situation only briefly, and no money was allocated to TV cooperation in the draft Nordic budget that will be submitted at the annual session in Oslo this March. That fact speaks for itself.

In the status report dealt with by the Cultural Committee, it is noted that the Tele-X channels will probably be leased to entirely different users, either Nordic or non-Nordic, if the countries cannot agree on a definite use for the satellite's channels.

The obviously confused discussion within the shifting number of participants—for one thing, Denmark's participation is uncertain—is concerned with the question of how the satellite's two or three channels should be used. And visible in the background are dissatisfied Nordic TV executives and telecommunications administrations. They made plans for four direct broadcast channels, never imagining that the governments would adopt the two-channel alternative, as as now been done.

Biggest Betrayal

Possible uses for the Tele-X channels are radio communications with long-distance trucks, data transmission, and so on. It is an irony of fate that that was what the Nordic satellite was originally intended for before the Nordic governments latched on to it as an alternative to the grandiose NORDSAT transmissions of the late 1970's.

"This is the biggest betrayal in the cultural area that the Nordic Council has ever been guilty of," says Swedish MP Ingrid Sundberg of the Conservative Party, who was a driving force for TV cooperation when she was a member of the council's Cultural Committee. She is now deputy chairwoman of the council's Budget and Control Committee.

Sundberg puts the blame for what she already condemns as having wrecked TV cooperation on the Swedish Social Democrats, who she says were doubtful from the start out of fear that the Swedish TV monopoly would be upset.

Sweden and Finland have also started sending some of their programming to each other using ground stations. According to plans, that cooperation was supposed to end when Tele-X started up.

Sundberg told DAGENS NYHETER that she is now going to do what she can on the council to see that the Nordic countries cooperate instead on the cable TV network that is developing in the Nordic region. One idea is that that network can be used to let people see Nordic TV broadcasts.

According to the plans for Tele-X, which will be launched by the French Ariane rocket in 1988—and those plans have changed several times, it would be possible to begin broadcasting in 1989.

Decision Awaited From Finland

55002426 Stockholm DAGENS NYHETER in Swedish 14 Nov 87 p 10

[Article by Kaa Eneberg]

[Text] The Swedish Government is sticking to its commitments as far as Nordic TV cooperation via Tele-X is concerned, but the decision as to whether there will be any Nordic broadcasts at all rests with the Finnish Government.

That is what Swedish Minister of Culture Bengt Goransson told DAGENS NYHETER concerning the current lull in connection with the once so grandiose project that is supposed to be implemented in 1988-89.

The waning discussion of the subject within the Nordic Council—at the recently held minisession in Turku, Finland, for example—is being interpreted by a growing crowd of Nordic MP's as a sign that TV cooperation is never going to become a reality.

The schedule is a very tight one. The satellite itself will be launched in 1988, and exchanges of programs are supposed to start the year after that.

"It is really time to finally show our hands and get down to business," said Bengt Goransson, but he himself dodged the direct question of whether he thought Nordic TV viewers would ever be able to see each other's programs:

"Well, I feel that there is a common Nordic interest in carrying out an exchange of programs and that doing so will have to cost money.

"But," Bengt Goransson added in a remark aimed at Finland's government, "if there are those who do not think that common interest exists, they should say so and not say that Nordic programs will be too expensive."

Bengt Goransson said: "If there are those who do not believe in an exchange of Nordic programs and are willing to pay the cost, they should dare to say so." And he added emphatically:

"Then they can also stop making bombastic speeches at the Nordic Council and talking about the big Nordic community of interests."

Definite Answer

Bengt Goransson expects to get a more definite answer of some kind at a ministerial meeting in December [1987]. The issue must be completely resolved before the Nordic Council meets in Oslo in March.

Conservative Party leader Carl Bildt, whose party pleaded for Nordic TV cooperation at an early stage, says that the session in Oslo should be devoted mainly to the question of what kind of TV cooperation is desired in the future.

He says he still believes in cooperation using four channels, but says he has little faith in the ability of the Nordic Council to settle the issue.

Liberal Party media expert Jan-Erik Wikstrom says it is the government's duty to find out as soon as possible how much real interest in cooperation actually exists in the Nordic region.

Personally, he believes that "the Social Democrats and the cultural workers" are to blame for the fact that TV cooperation is not already a reality.

Olof Johansson of the Center Party considers it regrettable that the government has not worked harder to get TV cooperation underway.

Swedish Media Expert Comments

55002426 Stockholm DAGENS NYHETER in Swedish 19 Nov 87 p 7

[Guest editorial by Jan-Olof Gurinder, information chief for the Space Corporation, former member of the government study commission on TV advertising, and negotiator with the Nordic countries on the use of Tele-X for television; first paragraph is DAGENS NYHETER introduction]

[Text] Direct TV broadcasts by satellite will certainly be a part of the future, but technology is not the main problem when it comes to Nordic TV cooperation, writes Jan-Olof Gurinder, a former member of the study commission on TV advertising and now information chief for the Space Corporation, in this reply to Anne-Margrete Wachtmeister. The wetlands of media policy may be hard to wade through, and that makes the prognosis for Tele-X doubtful.

Putting new technology to use is seldom possible without torment, especially in our well-organized society. It is not surprising, therefore, that the Tele-X project periodically stirs up the feelings of those who would prefer to see no change in established telecommunications and TV technology.

Appearing most recently in the succession of critics and doomsday prophets was Anne-Margrete Wachtmeister (A.M.W.) (DAGENS NYHETER Op Ed page, 12 November), and she did so in a surprising way. As a "consultant on media questions in the telecommunications area" and with her background at Swedish Television and as a Nordic official, she ought to be more familiar with the basic facts.

On one essential point, however, she is completely correct: Tele-X is likely to be failure. But she has the reasons reversed. The problem is not a lack of interest. The big interest in using the satellite operationally right from the start rather than just experimentally is the challenge that perhaps not all those concerned are able to handle.

Tele-X is regarded most often as purely a TV satellite. That is wrong. Tele-X is a high-powered satellite that will operate mainly in three areas: high-speed data transmission, video conferencing, and direct TV broadcasts. The system is in the forefront of telecommunications technology in all three areas and is not, as is sometimes claimed, of obsolete design. Its high transmitting power will allow individual reception with very small ground antennas with a diameter of from 20 to 30 cm in the case of TV and of 1.8 meters in the case of data communication and video conferencing. The result is low equipment costs and simple installations. The fact that the satellite can provide services for several independent "markets" is an obvious advantage from the standpoint of revenue.

Tele-X began as an industrial policy project and was viewed at the time as an experimental satellite. The development of data communication and satellite TV showed, however, that the basic idea was completely sound. Anyone who keeps up with international discussions cannot have failed to note that the "Tele-X model" is regarded in both the United States and Europe as the one with a future. Tele-X and user terminals will constitute a completely interlinked network that can reach everyone immediately. High-speed data transmission will be possible throughout the Nordic region regardless of how fast the use of optical fibers develops and regardless of the installation of digital exchanges and so on. Video conferences will be possible without its being necessary, as it is today, to leave one's workplace and go to a special studio.

In the field of TV, "cable fever" has begun to abate. The focus now is on satellites, which permit individual reception. Independence from cable networks is an absolute requirement for TV services, which are regarded as culturally desirable and which, in the name of fairness, must be immediately available all over the country.

The system solution in the case of Tele-X was based on a visionary idea. It is now regarded by future users and telecommunications engineers as providing the opportunity to create an extremely important complement to the telecommunications network on the ground even in countries as advanced in the field of telecommunications technology as Sweden and the rest of the Nordic region. Someone has said that "with Tele-X, we will have the same flexibility in the telecommunications network that helicopters provide for air traffic." What this means is that high-powered satellites in our environment will not solve the large-capacity problems; they will provide flexible and quick solutions for new communications needs with high-speed transmission to many points.

The users—and this applies to data and video services as well as TV—have emphasized time after time that their use of the system will be based on the assumption that it is reliable. Simply conducting tests for a limited period is not considered meaningful. That is the Gordian knot. So the danger that Tele-X will be a failure does not lie in the Tele-X as a system solution or in a nonexistent market.

The danger lies in the organizational and structural difficulties involved in channeling user interests and setting up a continuous service—that is, satellites to succeed Tele-X. The government has obviously seen the problem, and that explains why it appointed Bert Lundin to investigate the interest in expanded ownership of Tele-X and in the putting together of an operational system.

Briefly put, A.M.W.'s message is this: Tele-X is obsolete, there is no market for data services, there is no need for the contemplated TV services, and the economic conditions do not exist for other TV services.

First a few clarifications concerning facts which A.M.W. seems to be unaware of. Ericsson and Saab are not and have never been stockholders in the Space Corporation. It is a 100-percent state corporation owned by the Ministry of Industry. The space industry is not even represented on the board of directors. A.M.W. further claims that Norway and Finland have reduced their participation in Tele-X to just a few percent. She evidently cannot tell the difference between Tele-X as a technical project and payment for TV capacity. In the former case, Sweden is responsible for 82 percent, Norway for 15 percent, and Finland for 3 percent of the project. Those percentages were locked in when the project began, and they have not changed since. As far as the cost of leasing channels is concerned, the countries decided in 1985 to apply the usual Nordic GNP principles in sharing that cost.

A.M.W. declares superciliously that Bert Lundin's current talks with private industry and the Telecommunications Administration concerning Tele-X will probably not lead to anything. What she bases that conclusion on is unclear. To my knowledge, A.M.W. is not in any way involved in Lundin's work. What is a fact is that Swedish, Norwegian, and Finnish private industry has, in various connections, shown a very great interest in data and video services. But what those firms are demanding is the continuity provided by a backup satellite.

The statement that Sweden's Telecommunications Administration has "rejected the idea of using Tele-X for data communications" is a gross distortion. On the contrary, the Telecommunications Administration has pointed out that as a business scheme, Tele-X will need to do more than earn revenue from data and video services: revenue from TV operations will also be necessary. That observation is almost a truism, and it has also been mentioned by private industry in the current talks.

When it comes to direct TV transmissions by satellite, A.M.W. has misunderstood certain basic assumptions. Earthbound nationwide TV coverage involves very big and, in the long run, probably unacceptable demands as far as radio frequencies and operating costs are concerned. From the technical standpoint, it appears obvious that direct broadcast satellites are going to take over the job of providing that coverage, as has been intimated even by the Telecommunications Administration. That approach will save a lot of money and free up valuable frequencies for local and regional TV and other rapidly expanding types of "wireless" communication. Using the limited resource represented by available TV frequencies in the ground network primarily for Nordic TV exchanges does not seem sensible. Nor are cable networks a realistic alternative if we adopt any sort of rules for geographic fairness.

Individual reception from satellites is the only reasonable solution for Nordic TV that everyone in the Nordic region can benefit from and even for national TV in the long run. But that solution requires technology of the kind used in Tele-X. Claiming, in that connection—as A.M.W. does—that Luxembourg's planned Astra satellite would be a better alternative is simply ridiculous. Astra has 50 watts of transmitting power, compared to Tele-X's 230 watts, and its use in the Nordic region would require antennas of 1 meter or more—and one can hardly claim that that is less than the 20- or 30-centimeter antennas required by Tele-X.

Direct broadcast TV satellites will unquestionably be a part of the future, but at the moment, technology is not the main problem when it comes to Nordic TV cooperation. The wetlands of media policy may be hard to wade through, and that makes the prognosis for Tele-X, its use, and its successors doubtful. A.M.W. makes an astounding assertion in that connection when she says that Nordic broadcasting systems have been rejecting cooperation via satellite for 10 years.

If that is true, it would be helpful if the broadcasting systems would stand up now and explicitly reject the "offers" the politicians have come up with so far. That would clear the air and create the conditions for more creative discussions concerning the establishment of Nordic direct broadcast satellite TV channels based on conscious political decisions and aimed at developing and enriching the Nordic TV environment for the benefit of the public, artists, authors, filmmakers, and everyone else concerned. Like other things, quality usually costs money.

11798

Siemens Calling For a Centralized European Standardization Institute

5500A011 Amsterdam COMPUTABLE in Dutch 30 Oct 87 p 9

[Article by Robbert Hoeffnagel: "Siemens Calling for European Bellcore Institute, Reorganization of Standardization Process"; first paragraph is COMPUTABLE introduction]

[Text] Geneva—"Europe will get nowhere if standardization efforts are continued along current lines. We need a central standards institute like Bellcore in the United States, with comparable financial and human resources to concentrate exclusively on the development of standards." Siemens Chairman Hans Baur called for the creation of Eurocore during the Telecom 87 fair in Geneva.

"Standardization is the only key to achieve a worldwide telecommunications network. For Europe to play a major role in this global network, it should contribute greatly to the creation of standards." This declaration was made by Hans Baur, member of the Siemens board of directors, during a press conference at Telecom 87 in Geneva.

According to Baur, "Siemens thinks this goal will not be achieved with the present organizational structure of loose cooperation between national PTT's within the CCITT [Consultative Committee of International Telephone and Telegraph]. He prefers a European version of the American Bellcore: The national PTT's become shareholders of one central standards institute which handles the standardization process more quickly and efficiently. This insitute, already dubbed "Eurocore" by the Siemens chairman, should be provided with a staff and a budget similar to its American counterpart.

In this respect, Baur declared that it is already more than merely an idea: Siemens has concrete plans for the creation of such an organization and submitted them to the European Commission. At this moment, the proposals— which are mainly meant to provide momentum— are said to be the topic of discussion by the various parties involved. Baur says the first reaction is outrightly positive.

A European Commission spokesman could neither confirm nor deny that the Siemens proposal is being considered. However, the spokesman considers it to be a striking fact that of all companies, a West German company is making these proposals: "In this field, the West Germans are not exactly the most cooperative country within the Community." To some extent, however, the proposal does coincide with the European Commission's "Green Paper": one central European institute, in which both the national PTT's and trade and industry participate, according to the spokesman. The Commission is not in favor of restricting shareholdership or partnership to the national PTT's only: "Too much knowledge and experience have been acquired by industry to keep the door shut on it. Moreover, the past has shown that cooperation among the PTT's does not actually guarantee a uniform infrastructure everywhere."

25012

Introduction of ISDN in Europe Discussed

5500A026 Brussels ZERO UN INFORMATIQUE BELGIUM in Dutch 2 Nov 87 pp 1-3

[Article: "Broadband ISDN: 3.3 Billion Belgian Francs Spent on Research"; first paragraph is ZERO UN INFORMATIQUE BELGIUM introduction]

[Text] Five Belgian companies and the RTT are currently engaged in broadband ISDN [integrated services digital network]. This overview will show that the development of public networks differs from country to country and that the transition to ISDN will not be harmonious.

The ISDN strategy is becoming more refined. As concerns narrowband technology, Belgium is ahead of its neighbors: First the FRG, which is conducting an initial test in Mannheim and Stuttgart; and second, France, which started in the Cotes-du-Nord. The pilot project involving 720 subscribers throughout the country scheduled for mid-1988 will, deliberately, be rather limited.

But at Telecom'87 broadband ISDN was the focal point. For some countries this is food for thought; others, however, already have concrete plans; Belgium, for its part, has made a decision: ACEC [Charleroi Electrical Engineering Works], Atea, Bell Telephone, Philips, and Siemens have just signed a 3.3-billion Belgian franc contract over 5 years.

The tasks have been divided as follows: ACEC and Philips will work on transmission, Atea and Siemens on terminal equipment, and Bell on switching. At a later stage other companies, starting with Opticable, will be asked to join this venture.

Still, public network development in Europe differs considerably from country to country. This overview will show that the transition to ISDN will not be harmonious...

1. Denmark: Soon To Be Fully Digital

Although Denmark has already started digitizing its local lines, only 12 percent of the subscribers will have access to a digital switch at the end of 1987. By 1989, 80 percent of all telephone traffic should be routed via digital lines. By late 1987 or early 1988, 144 Kb/s (2B + D) lines should be available.

2. Finland: Optical Fibers

In Finland ISDN should become operational by the end of this decade. Tests have been conducted on small ISDN exchanges for urban digital networks. There are plans for 64-Kbit/s and broadband services using an optical fiber network.

3. France: The Most Digitized Country

The French network is the furthest developed: 55 percent of all switching and 70 percent of the transmission is digital. This already led to the introduction of a Transcom service providing the entire country with a 64-Kbit/s digital connection. In 1987 the RENAN [Business Network for New Digital Applications] pilot experiment involving 300 subscribers was launched in Brittany. To generalize ISDN, DGT [Telecommunications Directorate General] suggests the following schedule: the Cotes-du-Nord by the end of 1987, extensions to Paris, Neuilly, and Paris La Defense in 1988, opening a service in Lyons, Rennes, Marseilles, and Lille in 1989, and finally a national distribution in 1990.

4. Great Britain: 1992!

ISDN was launched after British Telecom (BT) had installed digital IDA (integrated digital access) access joints on the digital network. About 80 percent comply with the 1988 CCITT [Consultative Committee of International Telephone and Telegraph] recommendations concerning basic access.

5. Italy: Pilot System

The first digital switches were introduced in 1980, but complete digitization of the network by the PTT is not planned before 2010. In 1988, some 2,000 subscribers should have access to a first pilot ISDN service. By 1990 switching and digital transmission techniques should allow this service to be extended to a limited national service providing access to ISDN to 30,000 subscribers. The fact that there are three operators (SIT [Italian Telecommunications Company], ASST [State Telephone Service Company], and Italicable) does not really further the smooth introduction of ISDN.

6. The Netherlands: Still Analog!

Since 1970, the Netherlands has considerably extended its national telephone network. However, analog switches were used in this modernization effort. The first local digital switch should be installed by the end of 1987.

7. Norway: Digitization

Norway is digitizing its network to integrate 64-Kbit/s services, some of which are already operational: message handling, electronic money transfers, point of sale systems, electronic shopping, and relational database systems....

8. Spain: Digital Rings

Spain is still using analog lines. Digital lines, exchanges, and services are yet to be installed. "Digital rings" providing connections via coaxial or optical fibers should link the digital exchanges of major urban areas.

9. West Germany: Optical Cables

The FRG first started introducing digital switches in 1984. The transition to ISDN should begin in 1988 with two experiments involving 400 subscribers in the Mannheim and Stuttgart areas.

The Deutsche Bundespost's ISDN concept is based on the establishment of an optical fiber network in addition to the switched network. The target is to integrate narrow- and broad-band services by 1990-92 and to introduce a general broadband network as of 1992.

10. Sweden: The Leader

Sweden is digitizing its telephone network in view of a rapid introduction of ISDN. Televerket should offer a "fully digital" connection throughout the country by the end of 1987.

11. Switzerland: Testing

Switzerland is conducting field trials with its exchanges in Bern, Lausanne, and Zurich and is expected to offer 144-Kbit/s links to subscribers.

25039

FEDERAL REPUBLIC OF GERMANY

Limited Reforms Expected for Telecommunications Sector

55002438 Duesseldorf WIRTSCHAFTSWOCHE in German 15 Jan 88 pp 31-32

[Article by Roland Tichy: "Reform Only on the Fringes"]

[Text] The bill currently being prepared within the Post and Telecommunications Ministry still lags behind the slow-moving suggested reforms of the telecommunications commission: The minister is venturing forth only with the overdue organizational reform and with a breakup of the postal monopoly in a few peripheral areas.

Twenty-eight million households in the FRG got a letter from the West German PTT (Post, Telephone, Telegraph): "The postal service is shaping up," announced Minister Christian Schwarz-Schilling via a postal mailing. All of a sudden things are supposed to happen fast: As early as February discussion of the preliminary bill on PTT reform with the other FRG ministries, presentation to the cabinet by March, enactment into law by the end of the year and the first reform steps as early as 1989—at least this is the postal minister's itinerary.

However this springtime revitalization effort covers up the fact that, except for the organizational reform which had been postponed since the 1960's, nearly everything

is just as it was—the antiquated monopoly is putting on a new, modern face, as the currently pending confidential bills and arguments for a constitutional PTT bill show:

The Ministry for Post and Telecommunications will indeed be visibly separated from the actual business sectors. However, the minister will continue in the future to decide "medium and long-term business policy" and "within the scope of political requirements" to determine which new services are to be offered in the area of telecommunications. This is how he defines the boundaries of the monopoly and continues to remain minister, as well as owner, player and referee all in one.

The PTT will be formally separated into one company each for mail service, banking business and telecommunications. However, with no legal identities of their own they remain united within the special "Deutsche Bundespost" fund and are "expressly maintained to take mutual advantage of one another's services depending on need and economic feasibility."

Borrowing from corporate law, each of the three sectors will have its own CEO. However, these three CEO's form a triumvirate in a so-called board of management which represents the PTT externally, "attends to combined and coordinated activities" and acts as a "unified administration."

Each business sector is to see to it "that earnings cover expenditures and in addition that reasonable profit is obtained as a contribution to self-financing." But despite all of the assertions that the subsidizing of mail service by telephone customers would be ended, equalization of financial burdens among the PTT branches will continue to be permitted.

And the board of management will see to it that cross-subsidizing also quietly continues to function: It will determine the internal transfer prices which the postal subsidiaries mutually adopt so that they can continue to shift profits and deficits around.

Schwarz-Schilling came up with the establishment of the board of management in order to ward off the vocal protests of the West German postal union against the alleged "breakup of our public postal service." But other special interest groups are also standing in the way of fundamental reform. Conversion of the postal service to a "market-oriented service business with performance-based compensation and competition in performance as motivation for the employees" (Schwarz-Schilling) is also being slowed by Friedrich Zimmermann's interior ministry: At most, the CEO's of the new postal businesses and the management level immediately below them ought to be released, on the strength of his instructions, from their bonds as public servants.

Schwarz-Schilling also had to pull in his horns following pressure from industry: According his promise to the Central Association of the Electrical and Electronics Industries, the terminal equipment market will be opened up as of 1990 at the earliest—until then the postal service will continue to purchase its telephones from the cartel of a select group of West German suppliers.

There is also disagreement about the newly structured form of political supervision: The basic course of development for the PTT is currently being determined within the PTT administrative council; its 24 members include 5 deputies from the Bundestag, 5 representatives from the Laender and 5 representatives from trade and industry, as well as 7 union officials and 2 specialists in finance and technology—the latter provided up to now by Siemens. In the future Schwarz-Schilling will be able to fill a total of 63 supervisory board positions within the three subsidiaries. However, the representatives from trade and industry will come up empty: There would be no client for them to represent, because according to the new philosophy the PTT is competing with trade and industry.

Still an open question, however, is whether the Laender will go along: "The heads of the Land governments expect that in the future the rights of the Laender to participate in the administration in a substantive way will be maintained in their current scope," warned the recommendation adopted by the conference of minister presidents: The Laender are resisting the depoliticizing of the PTT in order to keep open their "options with respect to regional structural policy."

With so much political resistance against the organizational reform, there is little room left for the desired market reorientation: Schwarz-Schilling did announce a "careful examination" of whether car telephones and radio networks at least could be opened up to competitors as in England and France. However, opponents of reform are working toward dragging out the process as long as possible—if possible, long enough for all of the frequencies available for car telephones to be held already by the PTT.

And even free-wheeling satellite communications are to remain largely in the grip of the monopoly: Consequently, only particularly slow data streams may be sent by satellite from computer to computer—and moreover, the satellite networks may not be connected to the earth-bound networks of the PTT.

The fears of the PTT in this case are not unfounded: The other European PTT's and the international satellite organizations currently have excess capacity in terms of satellite channels. Because the Bundespost requires up to 20 times more for its data networks than other European PTT's, banks, insurance companies and publishing houses will have to forego the overly expensive postal network in favor of earth satellites.

Gerhard Stoltenberg, the FRG minister of finance, however, can be satisfied with the postal reform: Schwarz-Schilling is guaranteeing him an annual royalty from the PTT to the FRG budget of DM 5 billion until 1992; after that the PTT will be taxed like a corporation.

But here, too, the PTT people have built in a pitfall: Because tax-deductible pension reserves for full retirement benefits for postal officials will be formed as of 1989, nothing will then be left of the annual PTT profit for the finance minister.

12552

FRANCE

Laying of Undersea Fiber Optic Cable From Marseille to Ajaccio

83192329b Paris FRANCE TELECOM in French No 63, 1 Oct 1987 p 14

[Text] The laying of the Marseille-Ajaccio undersea fiber optic cable was executed by the French cable vessel "Vercors" from 27 to 29 July 1987.

The laying of this cable represents the final outcome of the technical development program that led to the development of the S 280 system. This system is the fruit of a joint venture involving CNET (National Center for Telecommunications Studies), which served as technical contractor for the entire project; DGT's Telecommunications and Foreign Network Office, which provided the financial backing; and two private companies, Cables de Lyon and Alcatel.

The Marseille-Ajaccio link holds the current world record for the longest undersea fiber optic link in commercial service.

Measuring 390 km in length, it has a transmission capacity of 2 x 280 Mbit/s, or the equivalent of 7,680 65 kbit/s simultaneous digital circuits. The cable consists of only two pairs of optical fibers and has has nine repeaters. A large number of government offices are interested in the S 280 system for their undersea cable international links.

This link is the first in a mediterranean network that is to extend to Sardinia and Sicily. The network is scheduled for connection with the east mediterranean optical network (EMOS 1) in 1990, with links to Greece, Turkey, and Israel.

13014

Interurban Network in Year 2000

83192329a Paris FRANCE TELECOM in French No 63, Oct 1987 pp 24-33

[Article by Daniel Chatain and Jean Lamy De La Chapelle: "The Interurban Network at the Dawn of the Year 2000"; first paragraph is FRANCE TELECOM introduction]

[Text] Like a giant spider web on the scale of France, today's interurban network covers almost 10,000 kilometers. All major urban areas, regional metropolises, and smaller cities or towns are connected to it. Two commitments loom on the horizon of the 21st century: full digitalization and large-scale development of fiber optics. Both are vital for the structure and functioning of this backbone of telecommunications.

Telephone, data transmission, image transmission—the applications carried over the interurban network are ample proof of the breadth and diversity of telecommunications. Yet telecommunications as such do not provide services. Additional installations (for example, at the network level) are needed to connect the customer. The nature of these installations provides a convenient means of classifying network services.

Voice, Data, Images

First and foremost, of course, is *interurban telephone traffic.* Today 85 percent of the network is still used for this purpose. This now largely digitized function (64 kbit/s lines) naturally encourages re-use of the media for data transmission at the same speed, with subscriber dialing, as for telephones. Known under the trade name of "Transcom-RNIS," this service constitutes one of the most important features of the Integrated Services Digital Network (ISDN), which will be the basic network 10 years from now. Standardized digital links adapted to each user's communications volume will make it possible to offer a full range of services, including voice, telecopy, videotex and data transmission, at up to twice the 64 kbit/s rate.

Another category encompasses *services using specialized switching.* Of these, the most salient are Numero Vert [Green Number] and Colisee [Coliseum]. Numero Vert is a toll-free service. A call to a customer, usually a business, is charged to the recipient. On the technical level, all calls beginning with 05 are routed to Chennevieres/Marne and then forwarded to the requested party's connecting switch. Data needed to bill the call is recorded as it passes through the Numero Vert center.

Unlike Numero Vert, which appeals to a diverse business clientele, Colisee is intended for larger companies with private multiple switch telephone networks. Colisee offers direct internetwork connection, abbreviated dialing, and attractive rates. In practice, customer installations with Colisee access are connected to a transit

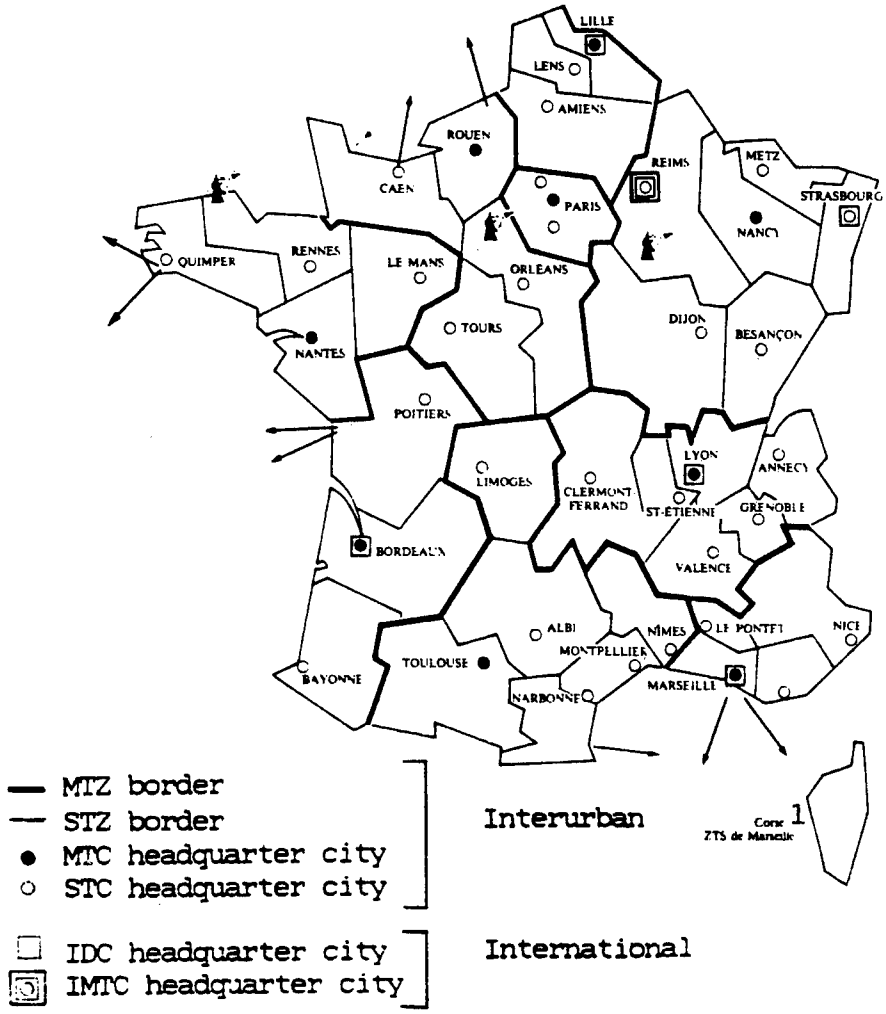


Figure 1. Interurban Network Hierarchy

Key:

1. Corsica
   STZ of Marseille

switch [toll switch] by special dedicated lines. Three switches of this type service all of France. Colisee and Numero Vert will eventually be ISDN facilities.

The third category is *data transmission*. This category accounts for 70 percent of long-distance leased lines. As with switched services, network digitalization has led to the marketing of fully digitalized transmission services. This solution has the advantage of allowing a wider range of speeds, higher quality, and constant operations monitoring. Marketed under the name of "Transfix-RNIS," these links have their own network, dubbed "Transmic." The Trasmic network includes not only local and interurban digital trunks, but terminal equipment and switching nodes as well. The introduction of control centers for direct network control will be the major innovation of the coming years. These centers will cut operating costs and improve

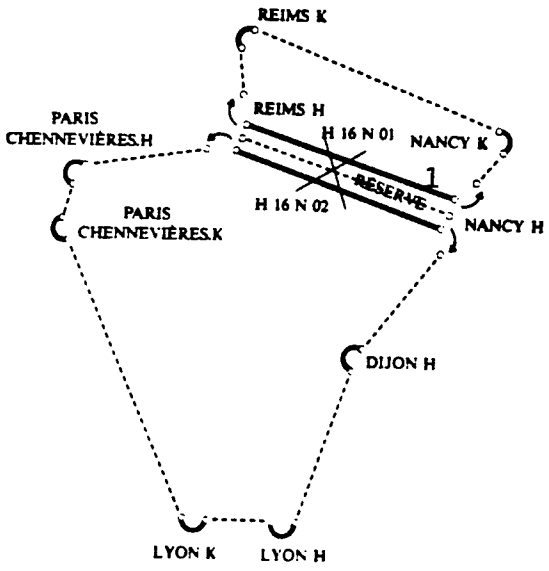


Figure 2. Sample Restoration Plan: Failure on Nancy-Reims 140 Mbit/s Digital Microwave Trunk

Key:

1. Backup

service (high-speed link creation, open-ended private networks, more efficient maintenance, etc.).

Eventually, this type of fully digitalized data transmission, which currently accounts for only 3 percent of data transmission, will replace all the current so-called analog lines.

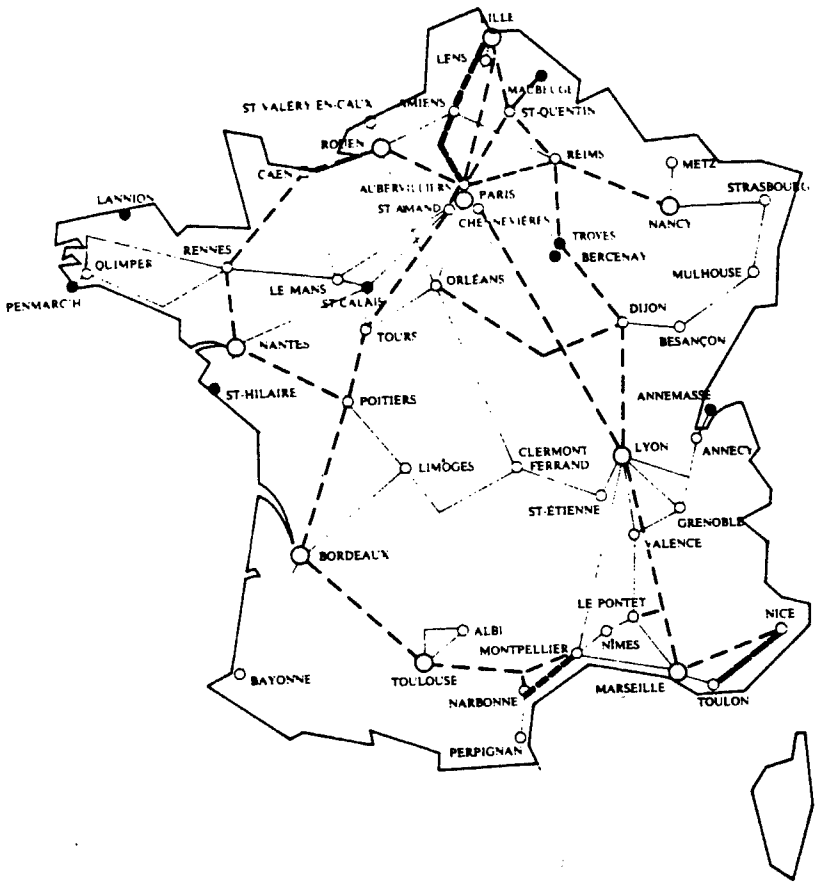
The last category, but by no means the least in this panorama of services, is *image transmission.* More and more, the interurban network is being used for long-distance transmission of television programs (from the point of production to network cable heads, for example) or for establishing dedicated temporary or permanent video hookups. Lower costs resulting from fiber optic transmission will cause these services to expand considerably. Moreover, new needs will develop: picture telephony, interactive visual services, and so forth. These will probably justify the creation of a specialized "wide band" network analogous to Transmic.

Hierarchical Network

Interurban service is structured much as in other highly advanced countries. Long-distance transmission and transit switching are under the authority of a single body, DTRN [National Network Telecommunications Directorate], headquartered in Toulouse.

The network services some 500 regional office access points. Interurban Nodes (IN's) interconnect all Autonomous Dispatching Zones (ADZ's) in the country. This system calls for both great unity (it is an immense web of some 600,000 lines crisscrossing all of France) and great flexibility with regard to upgrades and operation. Flexibility is achieved through the country's 5 operations units (DOTRN's), which rely on almost 200 operations centers combined to form 35 districts managing control requests within a radius of approximately 30 kilometers.

To optimize construction, the network is organized in a two-level hierarchy (Fig 1). The sub-regional level covers the Secondary Transit Zones (STZ's), which currently



— — 3.7/13.5 and 2.8/10.2 coaxial cable (8-12 components)
—— 1.2/4.4 coaxial cable (12-24 components)
— — Other
O MTC
STC
• International access points or technical points

Figure 3a. ICN: Coaxial

number around 40. All the interurban nodes of the various Autonomous Dispatching Zones are linked (generally in star formation) to a central point: the node associated with the Secondary Transit Center (STC). This is the so-called "sector" network.

The national level comprises all the links among the various nodes. This is the so-called InterConnection Network, or ICN. Unlike the sector network, it is highly meshed and has, of course, an immensely greater capacity.

In order further to optimize investment, the ICN actually consists of two levels. The Main Transit Zones (nine at this time) dispatch any request from one ADZ to another through their Main Transit Switches (MTS's), even though the traffic involved is fairly insignificant.

For security reasons, each subscriber switch is to be linked to two different transit switches in the same transit zone; the switches do not necessarily have to be in the same town. Also, in the future all interurban traffic will be switched in transit, thereby eliminating direct links between switches in different transit zones. This is the "Dispatching 1995" plan.

This plan will bring about profound changes in circuit structure (dispatching), but it should only have a fairly marginal impact on transmission trunk layout (routing). It should also slightly reduce the number of STZ's and MTZ's.

Greater Network Protection

No matter what precautions are taken, a telecommunications network is subject to a large number of accidental

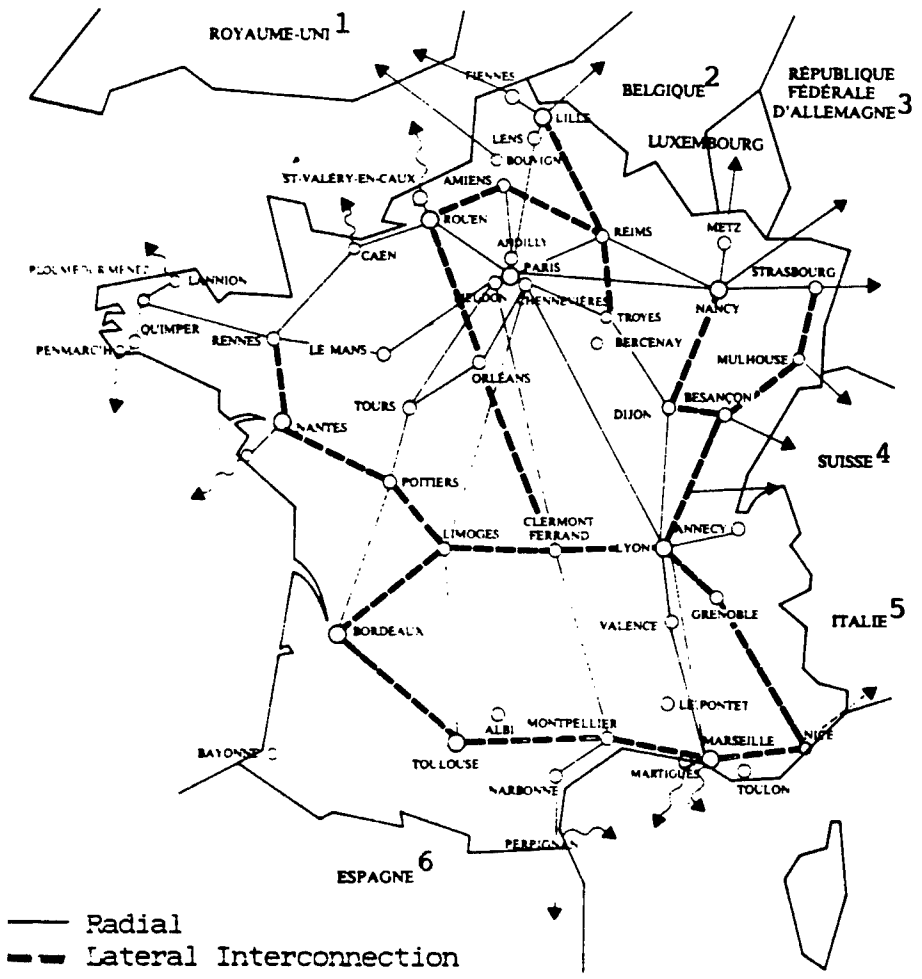


Figure 3b. ICN: Microwave

Key:

1. United Kingdom
2. Belgium
3. West Germany
4. Switzerland
5. Italy
6. Spain

disturbances of diverse origin which can seriously affect carried services: transmission equipment failures, coaxial trunk failure, or, exceptionally, accidental destruction of transmission centers. Network protection has therefore always received particular attention.

Early efforts focused on protecting transmission trunks. However, it became evident that, while transmission trunk protection could not be neglected, switching nodes needed complementary measures.

Protection revolves around three points: creation of a backup network, separation of the K and H sub-networks, and centralization of monitoring.

The *backup network* consists of normally unused transmission equipment that is specifically reserved for restoring any failed transmission routes necessary, especially blocks and groups supporting priority services (e.g., dedicated lines, international access, transit center access).

Backup capacity on large interurban network axes can reach 25 percent of the in-use network. This makes it possible to restore approximately 80 percent of circuits if the failure affects all analog network trunk transmission systems, and all circuits if it involves only a single system.

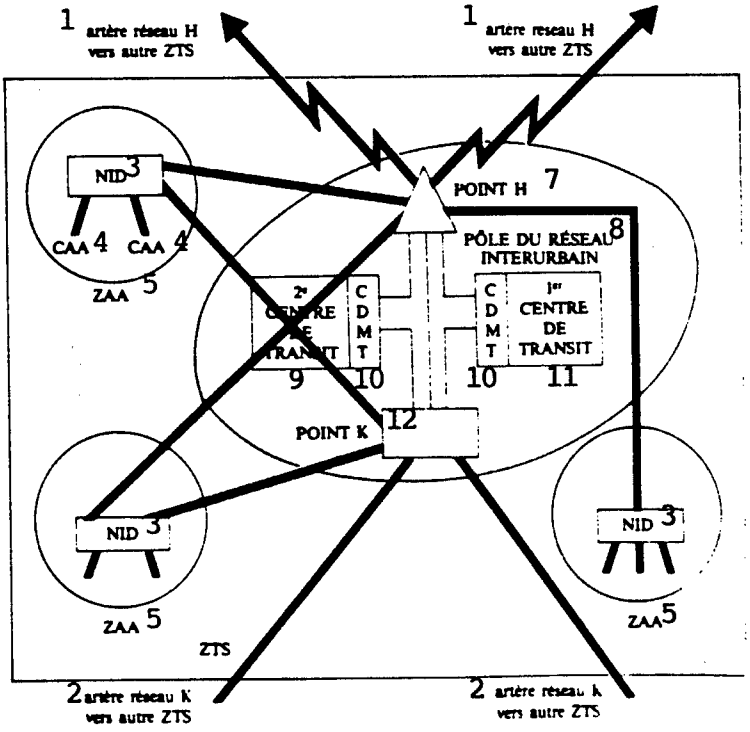


Figure 4. Schematic of H and K Network Organization

Key:

1. H network trunk to other STZ
2. K network trunk to other STZ
3. IN
4. ADC
5. ADZ
6. STZ
7. H point
8. Interurban network node
9. 2d transit center
10. [translation unknown]
11. 1st transit center
12. K point

An analog backup network already exists, and a digital version is being built. Identical performance should be achieved in the very near future.

A restoration plan established for each interurban network trunk tells operators which backup network equipment to use to best restore failed routes (Fig 2).

Similarly, international restoration plans for restoring international circuits originating in or transferred through France are under study in cooperation with foreign telecommunications bodies.

Protection of sector networks and links between ADZ's and transit center headquarter cities relies on the fact that each ADZ is usually serviced by both a coaxial and a microwave transmission trunk. If either trunk fails, priority lines are transferred to the other route's backup blocks. Transfer is accomplished by remote control on the analog network and is automatic on the digital network.

Lastly, it should be mentioned that interurban network microwave trunks have their own protection mechanism. A backup channel provides systematic protection for these links, most notably against atmospheric propagation defects.

K and H: The Goal Is Security

Transmission centers are themselves a source of interurban network fragility, especially if they concentrate too many transmission circuits that would be affected simultaneously in the event of failure. A case in point is the 1981 fire at the Lyon-Sevigne center, involving some 30,000 circuits.

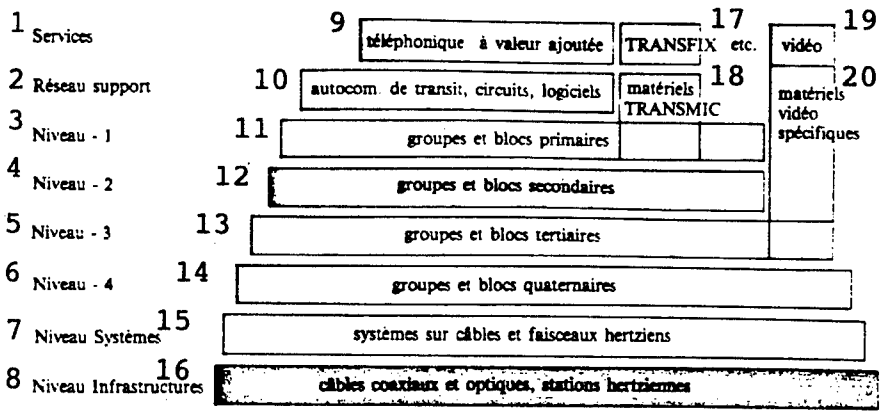


Figure 5. Network Layers

Key:

1. Services
2. Support Network
3. Level 1
4. Level 2
5. Level 3
6. Level 4
7. Systems level
8. Infrastructures level
9. Value-added telephone
10. Transit, circuit, software automated switching
11. Primary blocks and groups
12. Secondary blocks and groups
13. Third-level blocks and groups
14. Fourth-level blocks and groups
15. Cable-based and microwave systems
16. Coaxial and optical cable, microwave stations
17. TRANSFIX, etc.
18. TRANSMIC equipment
19. Video
20. Video-specific equipment

To solve this problem, beginning in 1982 a decision was made to institute *paired servicing* of large urban areas (mostly transit center headquarter cities). Switching traffic is shared by two centers located in different buildings, so that part of this traffic can be saved in case of failure at one of the two centers.

In practice, paired servicing means breaking up the interurban trunks into two different subsystems, the K and the H.

The K subsystem is so named because it has until now been composed essentially of cables. Most are coaxial, some are twisted wire pair, and to date all are "metallic." Capacities range from 120 to 7,680 circuits per equipment system.

The second is called the H subsystem because it is composed primarily of microwave ("Hertzian") beams, with capacities varying from 120 to 1,920 circuits per equipment system.

Thus the InterConnection Network, or ICN, covers two large meshed networks that can be connected at their [terminal] nodes, but are made up of totally separate branches (Figs 3a and 3b).

Paired servicing of other interurban network access points has also been implemented. At the close of 1986, over 65 percent of the ADZ's were serviced by two geographically separate digital transmission trunks. The result is two superimposed stars radiating from one or more STC (Fig 4).

Centralized Monitoring

The third facet of this security policy is *centralization of monitoring.*

In the event of failure, restoration should be as quick as possible in order to limit the length of disturbances. This issue is particularly important at centers that are not

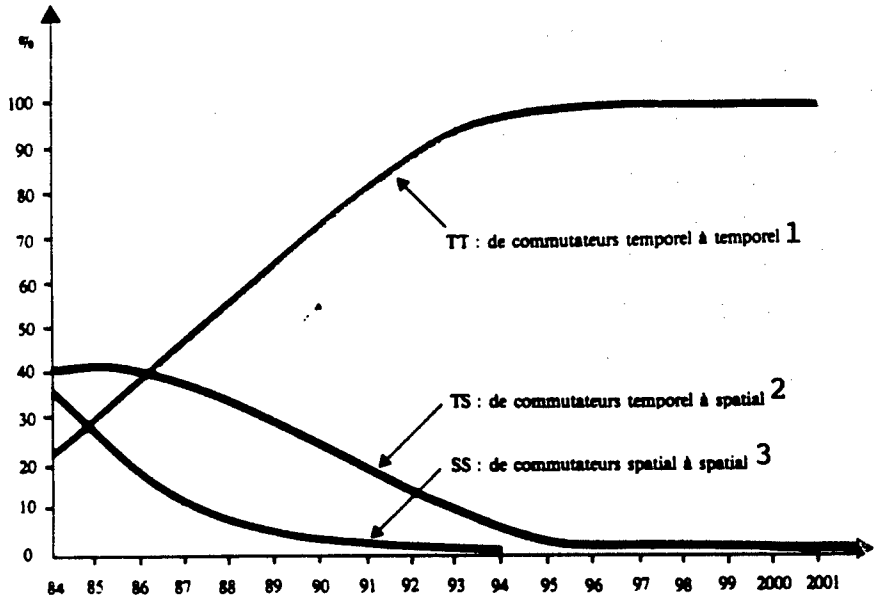


Figure 6. Trends in Development of Interurban Circuits

Key:

1. TT: Time-to-Time Switches
2. TS: Time-to-Space Switches
3. SS: Space-to-Space Switches

staffed around the clock. Also, manual intervention (for example, in the dispatchers) should be limited in order to reduce the risk of human error.

In certain cases, mostly on the sector network, switchover onto a backup system may be locally determined by automatic switching equipment.

Since a more global picture of operations is required at the InterConnection Network level, DTRN has opted for centralized monitoring. The first experiment, to begin in 1988, has three main objectives:

1. Monitoring of all interurban network links, to provide a clearer picture of network status. Monitoring will also furnish national statistics on network availability.

2. Central site remote control of restoration of the most important links, using failure information.

3. Eventual integration of digital transmission quality data.

Multi-Level Organization

The above products and services represent the customer's view of the interurban network landscape. If, much like geologists, we were to take a "cross section" of the network, it would reveal a succession of logically nested technology layers (Fig 5).

Although much simplified, this schematic does reflect the actual path of a signal from one network access point to another. For example, a telephone call travels through a succession of circuits and switches. Each of these circuits is part of a primary group (12 analog circuits) or primary block (30 digital circuits). In a structure reminiscent of a Russian doll, each primary group or block is then integrated into a secondary group or block, which is itself integrated into a third-level group or block, which is in turn inserted into a fourth-level group or block (480, 960, and 1,920 circuits respectively). Each of these fourth-level groups or blocks are part of one or more systems and will travel over a succession of microwave or cable trunks.

This organization also reflects network planning procedures. Before infrastructures can be planned, the requirements of all the different groups and blocks have to be calculated. Calculating these requirements calls for the availability of reliable forecasts on the future of each of the services offered.

The complexity of both physical and financial data requires the use of state-of-the-art information management systems.

The two tables summarize the tremendous quantities involved. Physical statistics (Table 1) are taken from the

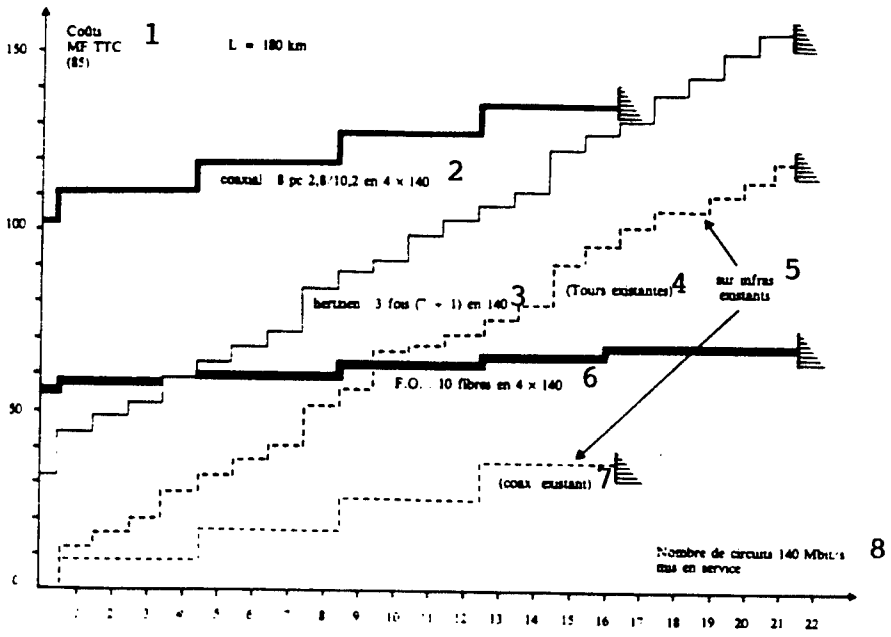


Figure 7. Investment Costs for Different Media

Key:

1. Costs in millions of francs, all taxes included (1985)
2. Coaxial: 8 components, 2.8/10.2, for 4 x 140
3. Microwave: 3 x (7 + 1) for 140
4. (Existing pylons)
5. Using existing infrastructure
6. F.O.: 10 fibers for 4 x 140
7. Existing coaxial
8. Number of 140 Mbit/s circuits brought on line

1986 balance sheet. Financial figures (Table 2) are from DTRN's 1987 investment budget.

Tomorrow's Network: Fiber Optics and Digitalization To Foster Quality

There is little risk in predicting that the network of the year 2000 will be almost totally digital and predominantly fiber-optic-based. Equally certain are improvements in service quality and increases in both the volume and the variety of the services offered.

Beyond a doubt, digitalization, fiber optics, and improved service quality are the three major issues that will affect the development of the interurban network.

The origin of the policy on digitalization of interurban communications can be traced, with some simplification, to several interrelated phenomena.

In the early 1980s, the development of "new services" requiring "electronic" switching, together with significantly lower customer switching costs made possible by time-division technology, brought about a revolution in the nature of interurban telephone circuits.

Links between switches, which had in the past been space-to-space, or SS, became increasingly time-to-time, or TT (Fig 6). This development was not without its impact on the overall cost of transmission between two specific points. (See box, "Financial Advantages of Digitalization.")

At the close of 1986, over 56 percent of interurban circuits in service were already digital, with 42 percent linking two time-division switches, 40 percent linking a time-division and a space-division switch, and only 18 percent linking two space-division switches.

CIRCUITS	ANALOG	DIGITAL
Level 1:	37,850 primary groups	12,900 primary blocks
Level 2:	12,680 secondary groups	4,730 secondary blocks
Level 4:	2,190 fourth-level groups	400 fourth-level blocks
Infrastructures:	38,400 kilometers of cable	690 pylons and microwave stations

Table 1. Interurban Network Capacity at the Close of 1986

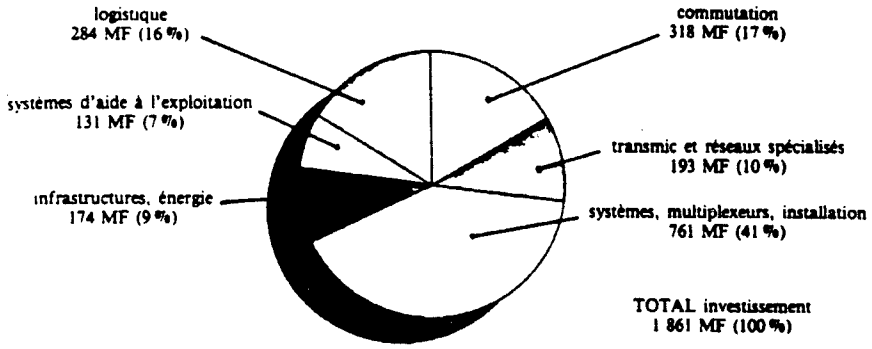


Table 2. DTRN Investment Budget for 1987

Key:

1. Logistics
   284 million francs (16 percent)
2. Operations assistance systems
   131 million francs (7 percent)
3. Infrastructures, energy
   174 million francs (9 percent)
4. Switching
   318 million francs (17 percent)
5. Transmic and specialized networks
   193 million francs (10 percent)
6. Systems, multiplexors, installation
   761 million francs (41 percent)
7. Total investment
   1,861 million francs (100 percent)

2001, the End of the Space Odyssey

Another major phenomenon made network digitalization unavoidable: the considerable growth of data transmissions. The fact is that for computers and terminals, analog transmission is no longer the "natural medium."

Lastly, common experience shows that the equipment we use has a limited life. In 1987, few of us are still listening to our favorite music on record players made 20 years ago. Similarly, it is unreasonable to expect all the analog equipment purchased massively between 1975 and 1980 still to be in service in the year 2001. Therefore, each year DTRN sets aside a significant portion of its budget for the progressive renewal of this plant. Given current investment allocations, transit switching should be fully digitalized by 1995, and digitalization of all transmissions should be complete by the turn of the century. Thus, the year 2001 will see the end of the space odyssey.

Diameters	Repairs per 100 km per year	Employees per year	Annual maintenance cost per 100 km (in thousands of francs)	Net cost per 100 km circuit (francs)
2.6/9.5:	2.6	1.1	365	7.9
1.2/4.4, composite:	4.6	1.65	545	10.7
1.2/4.4, homogeneous:	1	0.55	180	2.3
2.8/10.2 3.7/13.5:	1	0.8	265	1.0
Fiber optics:	1 (?)	0.6	200	0.6

Table 3. Oldest Cables Most Expensive To Maintain

Fiber Optics: A Strategy for the Year 2000

Between now and the year 2000, fiber optics will provide considerable improvements in long-distance, high-capacity digital transmission equipment, as compared to conventional microwave and coaxial cable systems. Already, microwave and coaxial cable is no longer being laid.

Advantage No 1: Quality. Greater distances between regeneration points (30 km at present, and undoubtedly much more in the future with longer optical wavelengths, as compared to 2 km for coaxial cables) considerably reduces the risk of failure. In addition, fiber insensitivity to electromagnetic disturbances guarantees higher quality.

Advantage No 2: Cost. Fiber optic systems require little in the way of equipment. The cables are structurally very simple, do not contain any troublesome primary materials (such as copper), and allow simplified laying.

Even today, optical cable is two or three times easier to make than coaxial cable. Moreover, system installation is also two or three times cheaper. Clearly, optical technology is more competitive whenever cable infrastructure is to be built. Thus, normal infrastructure requirements will be met by investments in fiber optics. Nevertheless, microwaves are still quite cost-effective for medium capacities (up to half a dozen at 140 Mbit/s) as a result of savings due to the moderate cost of support infrastructure (pylons every 40 to 50 kilometers). However, system installation costs remain high (Fig 7).

Its very high transmission capacity—560 Mbit/s now, several gigabits per second in the near future—make fiber optics the support best suited to meet the explosion in information, data, and, above all, image transmission requirements.

Taking these factors into account, DTRN has adopted the following global strategy for the rest of this century:

1. Use optical technology for all major axes for which saturation can be predicted in the short or medium term.

2. Strive for "optical connectivity" for reasons of quality.

3. Consequently, target for the near future initial optical servicing of the major French metropolises. (See box, "Fiber Optics: A 3-Year Plan.") This will also allow a complete restructuring of the current coaxial network. Built bit by bit over its 40-year existence, this very complex network measures over 36,000 km, while an optimized network servicing the same points would consist of only 20,000 km of optical cable, each with a potentially much superior carrier capacity.

- ○ MTC
- ○ STC
- ● Target network international access point or technical point

▬ Fiber optic cable: 3-year plan, 1988-1989-1990

Target Optical Network

Key: 1. West Germany
2. Undersea fiber optic cables

4. Plan fairly systematically for optical backup systems on the optical cable laid, in order to maintain optical quality for a longer period of time despite unavoidable system failures (in particular, laser life).

Simulations show very positive financial figures in spite of the initial civil engineering costs inherent in optical systems. These outlays are made up for by savings on upgrading conventional systems and by disinvestment in old coaxial cable which is particularly troublesome to maintain. (See Table 3.) Indeed, although the coaxial plant is still relatively new, with an average age of 12 years, it is also fairly heterogeneous. The oldest cables have been in service for 35 years! As the saying goes, you are only as old as your arteries.

Nonetheless, digitalization and the massive introduction of fiber optics will provide a youth cure. It is a good bet that the 21st century will open on a modern network, carrying the interactive services of the future.

[Boxed item: This article is based on information furnished by Messrs Caclin, Serreault, and Vautrin.]

[Box, p 31]

Financial Advantages of Digitalization

In addition to the undeniable technological advantages, digitalization presents some far-from-negligible financial pluses. For example, an "installed erlang" in a crossbar technology switching center would cost Fr 38,000 (in 1986 francs), and only Fr 6,700 with time-division technology.

Similarly, it is easy to compare the cost of a circuit (still in 1986 francs) between two time-division switches, say, 300 km apart.

1. Transmission costs over an analog system with 10,800 cabled circuits: two analog-digital conversions (Fr 5,000), plus two modulations (Fr 16,600), plus cost of system (300 x Fr 6.6) = Fr 25,580.

2. Transmission costs for the same path over a system with 7,680 cabled digital circuits: two multiplexings (Fr 700), plus per-kilometer cost of system (300 x Fr 7.9) = Fr 3,070.

Under these circumstances, the 1980 decision not to order any new analog systems for the interurban network is an understandable necessity.

[Box, p 32]

Fiber Optics: A 3-Year Plan

Fiber optics are being introduced into the telecommunications network on a variety of levels: videocommunication networks; urban, interurban, and undersea links; and so forth. They are already a reality for urban links and cable networks, and have played a role in the interurban network since 1981.

The year 1981 saw the launching of the La Fleche-Angers experimental multimode interurban link. It was followed by the Le Mans-La Fleche monomode link in 1983. This link, which went on line in March 1987, is the first segment of the future Paris-Nantes trunk.

The first large-scale fiber optics projects in the interurban network began this year with Paris-Dijon and a joint operation with West Germany (between Mulhouse, Strasbourg, and Karlsruhe). Also noteworthy is the first undersea fiber optic cable laid between Marseille and Ajaccio last July.

A 3-year plan covering 1988, 1989, and 1990 has been adopted for 800 km of trunk a year. The entire package allocates 240 million francs per year for cable and 20 or 30 million for systems. (See map.) For the next 3 years, this means 2,400 km of cable, representing an order of almost 50,000 km of fiber. Several major traffic axes are to be covered; specifically, Lille-Paris-Lyon-Marseille and Strasbourg-Paris-Nantes-Quimper. In addition, these cables will be continuous with their international counterparts scheduled to become operational beginning in 1988: the TAT 8 transatlantic cable and a Franco-German cable crossing the border near Strasbourg.

Based on a construction rate of 800 km per year, the optical network construction program will span a very long period. It must therefore be dimensioned to met long-term needs. Obviously, the answer lies in the choice of the number of fibers per cable. To better cover a period so fraught with uncertainties, empty conduits are being laid in the trenches so that new cable can be pulled through at a later date.

This program is part of a long-term voluntary target plan, illustrated on the optical network target map. When the program is entirely completed, the network will contain approximately 20,000 km of fiber optic cable.

13014

France, FRG Step Up Cooperation

5500A014 Paris ZERO UN INFORMATIQUE in French 23 Nov 87 p 16

[Article signed E.S.: "French-German Agreement: End of a Dispute"; first paragraph is ZERO UN INFORMATIQUE introduction]

[Text] Europe is scoring points in telecommunications. The agreements signed at the French-German summit in Karlsruhe put to an end a disagreement of several months between the two P&T [Post and Telecommunications] authorities.

France and Germany are privileged economic partners, but relations between the two countries in the field of telecommunications have suffered for 18 months from a dispute caused by the peculiarities of their P&T administrations. The main stumbling block was minitel [French videotext system], which the FRG refused to certify because its regulations prohibit the use of terminals with built-in modems and allow only external ones.

This situation was reflected last December in a complaint lodged by France before the European Commission under Article 30 of the Treaty of Rome regarding nontariff barriers to trade between EEC countries. Germany was thus accused of preventing the sale of French minitels in its territory.

However, in their concern for accommodation, the two ministers involved had requested the formation of a working group instructed to obtain reciprocal certification of Teletel terminals in the FRG and Bildschirmtext (BTX) [German system] terminals in France.

The disagreement has just been resolved at the French-German summit in Karlsruhe. Regular meetings between P&T Minister Gerard Longuet and his German counterpart, Christian Schwartz-Schilling, have brought about the signing of a series of historic agreements which demonstrate the improved relationships in telecommunications between both countries.

The first agreement involves reciprocal certification by the two countries of minitel and BTX terminals. France may sell M1B Alcatel-Telic terminals in the FRG. Alcatel-Telic thinks that it is still too early to evaluate the market accurately, whereas the French minister estimates it at several hundred thousand sets. Production of a model consistent with German specifications should be announced within the next few days.

More details are also expected concerning the number of BTX terminals that could be offered to French customers. Obviously BTX's could be offered for rent in Telecom's sales agencies, but it should be clear that the two devices are still incompatible and that in the absence of a gateway consultations can only be made on videotex systems of the same type.

In fact, the Karlsruhe agreements go considerably beyond this particular point and actually stimulate cooperation between the two countries. Thus, the summit was also marked by the signing of an agreement on operation of the Mulhouse-Karlsruhe optical fiber link, which will carry 76,000 cross-border telephone calls, the common choice of a joint French-German telephone set manufactured in both countries, and the decision to distribute "telecom" cards usable in both France and the FRG.

In addition, the two ministers agreed on a joint strategy regarding new services by asking their respective P&T authorities to set up a single office offering customers dedicated cross-border lines in the same place and using a single invoice. The experience that comes from the measures adopted by the two administrations will be reflected in the work of the CEPT [European Conference of Postal and Telecommunications Offices].

Another proposal involved the establishment of joint DGT [Directorate General for Telecommunications]/Bundespost subsidiaries to market value-added services on an international basis. It was also suggested to create a French-German working group, in the spirit of the EEC Green Paper's guidelines, to follow up regulatory developments in the telecommunications sector and to harmonize conditions for implementing new regulations in a European framework. Concrete proposals are expected in March 1988.

Moreover, the P&T ministers of both countries reaffirmed their support for the creation of a common market in telecommunications services and equipment by 31 December 1992. Concrete projects for cooperation have already produced results in the areas of mobile communications and optical fiber links. Two other cooperative projects are on the agenda: a terminal likely to be purchased by both countries and common specifications for a 2.4-Gbit/sec optical fiber system.

Finally, the ministers gave their support to the decision made by the CEPT directors general for telecommunications to create a European standards institute and invited their P&T authorities to hold regular consultations on international issues of common concern.

25046

New French ISDN Network Presented

5500A013 Paris L'USINE NOUVELLE in French 15 Oct 87 pp 80-81

Article by Alain Dieul: "Telecom'87: Networks Are Changing Communications"; first paragraph is L'USINE NOUVELLE introduction]

[Text] The prototype of a digital multiservice network is to be shown in Geneva. It is French and offers a preview of the national telephone network of the 1990s.

Blending telephone, telex, and various computerized data links into a single network such as Transpac seems utopic. Until now such services required specific lines, each with its own standard. And yet the development of the integrated services digital network (ISDN) makes it possible to integrate all these functions in a simple telephone line. The key to this miracle is the increase in the speed of data transmission through digital technology.

Behind this technical feat there is a fabulous market in the making because it entails not only modifying the structure of the telephone exchanges, but also developing terminals suited to the planned applications. That is why Telecom'87, which opens in Geneva on 20 October, will be dominated by ISDN.

During these "Telecom Olympics" (Telecom is held every 4 years), all eyes will be turned toward the French, who seem to be trailblazers and are indisputably the world's frontrunners in this area. The RENAN [business network for new digital applications] network, on which the Directorate General of Telecommunications [DGT] is currently putting the finishing touches in the Cotes-du-Nord area, will be linked during Telecom'87 to an on-site Alcatel E10 digital exchange. This installation will enable visitors to judge the system's capabilities. They will get a preview of the possibilities of the RENAN facility, to be operational by the end of the year servicing 300 subscribers via the Saint-Brieuc exchange. This Brittany ISDN will be followed next year by the linkup of 9,000 subscribers in Paris; by 1990 all of France should be covered.

It is a good bet that the telephone will remain the device that is used the most for a long time. Still, ISDN will gradually perfect its capabilities. "Today, out of 10 calls, a quarter go unanswered. With ISDN, the terminal will indicate to the person being called the number of the person calling," explains Jean-Pierre Temime, engineer in charge of telecommunications.

It is primarily the small firms that lack a local area network which will find the future applications of greatest interest. For example, ISDN will allow the connection of workstations sharing a central processing unit using CAD software and graphic databases. Another application: the transmission of a high-definition A4-sized photocopy in under 5 seconds. These results are achieved thanks to the system's speed. As Jean-Pierre Temime explains, "ISDN will transmit data at a rate of 64 Kbit/s from any point in France to another, whereas throughput of the current analog switched network is limited to between 4,800 and 9,600 bits per second."

The installation of the national network will take place in four major stages—the digitization of the exchanges, the synchronization of the network, enhanced signal display (to take advantage of all the applications offered), and digitization of subscriber linkups. Today the first two stages are practically finished (56 percent of the long-distance network is already digitized). The structure of the national digital network is based on the Alcatel E10 exchanges. The advantage they have is that they handle both analog and digital lines. As Jacques Dunogue, vice president for marketing of Alcatel-CIT, explains, "the E10 exchanges were designed very early on the basis of future ISDN requirements. Their level of compatibility is higher than that of their rivals. This is true to such an extent that to link a subscriber to ISDN, we will only have to change an electronic card. The other European networks have been designed for analog links, thereby compelling countries like the FRG and the UK to install a second network—a digital one."

Digital transmission requires perfect synchronization of signals. That is the second stage. Each exchange has its own time base (an internal clock). A deviation between two transmission centers can create serious errors, such as duplication or loss of data. Although such a slippage may be almost imperceptible during telephone communication, it is unacceptable for data transmission. The entire network must therefore be managed with great precision. That is the job of the digital network synchronization unit (USRN) developed together with CNET [National Center for Telecommunications Studies] and supplied by LTT [Telegraph and Telephone Lines]. It includes two cesium atomic clocks which synchronize the network with astronomical precision (the variation does not exceed 1 second in 320 years, which allows plenty of time in which to find something better): a world's first.

The third major aspect is the enhanced signal display function which permits additional services such as identification of the person calling or the direct selection of a terminal among those connected to a single line. The International Telegraph and Telephone Advisory Committee [CCITT] has issued a code which should be applied to the "semaphore" channel (see box). This signal function, which is expected to be improved upon, will represent substantial progress: It will improve the quality of services and reduce linkup time to a matter of seconds. This stage still requires the development of software. According to Jacques Dunogue, "this tremendous program represents 5 million instructions processed by hundreds of processors and calls for software as complex as that used by NASA for control of manned flights." Alcatel has designed the program in a highly modular form, permitting gradual improvement based on requirements. All time-division switches (more than 750) are expected to use the code by 1991.

The fourth stage is the digital linkup of all the subscribers while retaining the existing infrastructure. Concentrators of a size limited to 250 lines will replace the old hookup units. They will be connected to the nearest digital exchange by a high-speed packet-switching link. Dubbed digital "satellite" centers, they will constitute a veritable gateway to ISDN.

The RENAN operation will permit on-the-spot validation of all the necessary equipment and will also help better define user requirements. After the Geneva preview, the ball will be in the courts of the terminal and services suppliers.

[Box, p 81]

Standards: The First Steps

The CCITT, which brings together different network operators, has since the inception of the ISDN concept imposed the major principles of the OSI (open systems

interconnection) model. This model will make it possible to use data processing and office automation protocols—the major services concerned with ISDN—on the telecommunication networks. An initial group of recommendations, tabled in 1984, will be ready next year. They specify two types of access.

The basic access, used by private individuals and by firms with fewer than eight terminals to connect, incudes two 64-Kbit/s links and one 16-Kbit/s channel for signal transmissions dubbed "semaphore." That means 144 Kbit/s to transmit either voice or data.

The primary access concerns larger firms that have their own switchboards (PABX). It is composed of 30 64-Kbit channels in addition to the semaphore channel. That should be enough to process a lot of communications!

25050

Overview of Current CNET Research

5500A019 Issy-les-Moulineaux L'ECHO DES RECHERCHES in French 2nd quarter 87 p 2

[English-language abstracts of five articles published in aforementioned source]

[Text] 1. Terminals for the ISDN Era: From Speech to Image, by F. du Castel, G. Pays, G. Brillet

Deployment of the ISDN involves heavy investments amounting to several times the sums currently or formerly invested in the telephone network. What services are most likely to elicit the greatest demand and thus generate sufficient returns on this investment? This key question is addressed in the present article which examines the various existing or planned services, and how they can be used to advantage by both professional and residential subscribers.

2. Communication Services: Innovation Through True-to-scale Testing, by S. Craipeau, F. Kretz, A. Briole

"Innovations" in communications services imply the simultaneous development of support structures, service contents, and uses, the combination of which should benefit all users both socially and economically. The conjunction of these developments is most productive when tested in-field under true working conditions. The authors' aim is to show what these experiments actually involve and how the potential stakes take form. Also discussed are the multiple aspects of the experimental procedure and of the associated social process.

3. Bulk Wave Piezoelectric Devices, by J. Detaint, R. Lefevre

Use of piezoelectric devices is expanding rapidly due to the need for greater frequency and timing precision in telecommunications systems, and also in response to the intensified use of VLSI circuits, for which these devices will provide the clock frequency.

Similar progress has also been observed in device performance as a result of several factors: materials research, advances in the modeling and design of known circuits, and the development of new types of resonators and filters.

This research has opened up remarkable inroads toward enhanced stability, high frequencies, broad bandwidths, miniaturization, and recent collective device fabrication based on wafer techniques.

4. CMOS Technologies Implemented at CNET-Grenoble in 1987, by D. Bois

The R&D (research and development) effort involved in mastering the most advanced CMOS integrated circuit fabrication technologies, and making them industrially viable, represents several hundred man-years of work. The results of this effort are discussed in the present article.

After describing how such technologies emerge, the author presents the family of CMOS processes currently available or under development at the CNET- Grenoble, with emphasis on those processes designed specifically to meet telecommunications equipment requirements.

5. A Statistical Analysis of Telecommunications Component Reliability, by A. Lelievre

Analysis of electronic component reliability requires the acquisition of measurements, which is often costly and complex. The interpretation of this data is based on powerful statistical methods. Data analysis, significantly sped up through the use of computers, is a vital tool for processing large quantities of information. This information is drawn from both equipment currently in operation in the telecommunication network and components tested in the laboratory.

European Academic Research Network Operating Autonomously

5500A021 Paris ZERO UN INFORMATIQUE in French 2 Nov 87 p 26

[Article signed R.P.B.: "EARN Takes Off...Alone"; first paragraph is ZERO UN INFORMATIQUE introduction]

[Excerpts] With the departure of its sponsor, IBM, planned for the end of the year, the European research network is acquiring the resources it needs to continue. The French EARN Association met in Bordeaux to plan its future.

In February 1984 at CERN [European Center for Nuclear Research] in Geneva the major European universities and research centers agreed to set up an international communications network, EARN (European Academic and Research Network).

IBM supported the endeavor by providing equipment, technical assistance, as well as financial assistance by assuming the costs of international lines and certain local lines.

But all good things must end and according to the original agreement, IBM is to withdraw at the end of 1987 leaving the users the masters of their own destiny.

After 3 years, the EARN network is continuing to develop because, more than others, researchers appreciate how a computer network can eliminate the constraints of time and space implicit in meetings, telephone conversations, and correspondence.

By using EARN or other networks of this type, they can take advantage of file transfer and database consultation services, remote job submission, real-time message exchange, and electronic mail.

EARN is linked to two other major networks, Bitnet (mainly United States and Japan) and Netnorth (Canada), so that the whole constitutes a single network interconnecting almost 2,000 computers (the network nodes). Currently EARN's growth can be considered very rapid since the rate is on the order of one new node per day.

Gateways also allow access to the other major research networks such as Janet (United Kingdom), DNF (Germany), Sunet (Sweden), Arpanet (United States), or to specialized networks such as UUCP (for Unix) or Span (NASA). In all, about 10 networks can be accessed from EARN.

France occupies a privileged position in Europe and handles all the traffic from Southern Europe over five international links which process about 1 billion characters per month. A 56,000-character/second satellite link has been installed between Montpellier and New York to handle the sizeable traffic which exists between Europe and the United States.

Today there are more than 80 nodes in France and there will be more than 100 in 1988, a real growth given that the first four nodes were linked up in 1984 (Ecole des Mines de Paris [EMP], Ecole Normale Superieure [ENS], Ecole des Hautes Etudes Commerciales, and Centre National Universitaire Sud de Calcul).

Among the major French scientific communities linked to EARN are the following: CNRS [National Center for Scientific Research] (together with CIRCE [Interregional Electronic Computation Center] and the Centre de Calcul de Strasbourg), the "grandes ecoles" (ENS, EMP, Supelec, Polytechnique, Centrale, ESTP [Special School for Public Works]), the Ministry of Education (together with CNUSC [Southern National University Computing Center] and the regional interuniversity centers), hospitals (CRIH, SIRIF, AP), INRA [National Institute for Agronomic Research], INSERM [National Institute for Health and Medical Research], etc. In all there are 39 DEC nodes, 33 IBM nodes, and 8 Bull nodes, with the balance spread among NAS, Modcomp, and Data General equipment.

After acquiring its independence EARN will pass along its costs to the user countries. The costs will be broken down into international (costs of international links and operating costs) and national costs (administrative personnel, documentation and logistic support, research costs, software procurement, etc.).

Currently, funding methods have not been identified by all the participating countries. As for France, however, the network and the users themselves will come under the Ministry of Research and Higher Education. The users met recently at the Bordeaux Sciences Faculty following a "post-87" study group and identified EARN France's funding needs.

These come approximately to a proportionate share of Fr 0.5 million for international costs and Fr 0.6 million for national costs. In addition, the costs of certain dedicated links which make up the backbone of the French network will be assumed by EARN France.

These backbone links consist of lines hooking up the concentration nodes to the network and of dedicated trunk lines which connect the network to the various sites throughout France—provided that the lines not be used for other purposes.

The concentration nodes serve to approve connections to their machine from outside sites. They thus participate financially in the network, by providing both staff and equipment. All the sites which are not part of the backbone will have to assume the cost of the dedicated line which connects them to a node.

In accordance with the application of this principle, the expected cost of the links for which EARN France is responsible is thus on the order of Fr 1.3 million and the total financial charges should amount to about Fr 2.4 million. In addition, it is not out of the question that manufacturers, including IBM, could also participate in the network's financing.

25050

New Telephone Network Planned for 1989

55002435 Paris LE NOUVEL ECONOMISTE in French 25 Dec 87 p 22

[Article by Jacqueline de Linares: "Mobile Telephone: A Second Network for 1989"; first sentence is introductory material]

[Text] The solution accepted by the government protects French interests. It is a small breach in the PTT's monopoly, but it will perhaps allow users to obtain a

mobile telephone more quickly and at a better price. Last week the ministers of the PTT and of industry, Gerard Longuet and Alain Madelin, granted a second mobile telephone network to the General Water Company in conjunction with the French firm Alcatel and the Finnish firm Nokia, rather than to the Bouygues-Matra-Ericsson group or Lyon Water Company-Motorola. The new network should be operational at the beginning of 1989 and will allow 100,000 additional subscribers to have a mobile telephone. The expected cost of the equipment is between 800 million and 1.2 billion francs. The General Water Company will provide this investment. It will put together an operating company, of which it will hold about 30 percent, and will work with TDF, among others. Participation of the Lyon Water Company and of an American operating company (Bell Operating Company) is also being considered.

The General Water Company will use its knowhow for marketing and customer service (subscribing, maintenance, etc.). Alcatel will manufacture the majority of the 3,904 transceivers needed for the operation of the new system in its factory in Laval. Nokia (20 billion francs turnover) will contribute its technology (the NMT 450), which has already been proven in Scandinavia, Turkey and China, and will provide the exchanges. Anyone can manufacture the mobile telephones after being approved by the PTT. The opening of this new network should bring a burst of oxygen to mobile telephone equipment in France, which is currently quite behind the times. Only 30,000 subscribers can call from their cars, compared to 200,000 in Great Britain. By opening up this activity to competition, the PTT minister can put his liberal ideas into practice without much risk because it is less symbolic of public service than the good old telephone.

The General Water Company has snatched from its competitors a market estimated at 1 billion francs when at cruising speed. At the same time it is implementing an impressive diversification plan. The mobile telephone is the symbol of telecommunications of the year 2000. It will soon be portable, carried around in briefcases and purses. The company, headed by Guy Dejouany, is rounding out its recently developed communications activities; in particular, the construction and operation of cable television networks and participation in the financing of thematic television channels. During the competition it did benefit from a golden advantage: the presence in its group of the French champion in telecommunications, Alcatel. The request for proposals mentioned two selection criteria: Quality of service and a concern for protecting the interests of French business. The Lyon Water Company also included Alcatel in its proposal with Motorola, but under conditions deemed to be less advantageous for the French manufacturer. Bouygues was eliminated because it had joined up with Matra, which is already providing the DGT with mobile telephones (Radiocom 2000), and with the Swedish firm Ericsson, a formidable competitor for French hardware.

Catching Up

Alcatel, which until now had not finished developing its own mobile telephone system (unlike Matra-Ericsson and Motorola), can now catch up. So now there will be more incessant competition, in this case for the next generation of mobile telephones, the so-called European "digital cellular." Alcatel recently signed an agreement with Nokia and the German firm AEG in order to be in the starting block. The three firms together plan to invest 600 million francs over 4 years in this new telephone. The stakes are worth it. The market for the hardware for this telephone of the future is estimated to be some 120 billion francs.

9720

SWITZERLAND

Swiss Install Single, OSI-Compatible University Network

5500A015 Paris ZERO UN INFORMATIQUE in French 23 Nov 87 p 26

[Article by Jacques Bettex: "Switch University Network Will Switch EARN"; first paragraph is ZERO UN INFORMATIQUE introduction]

[Text] A foundation set up by the Swiss Confederation and eight cantons is supervising the development of the national university network dubbed Switch. Its European precursor, EARN [European Academic Research Network], will move toward an OSI architecture with the support of Digital Equipment.

On 21 October the inaugural act of the Switch foundation was signed by federal adviser Flavio Cotti, chief of the Federal Department of the Interior, and by the heads of the Public Education Departments of the eight university cantons. The foundation aims at the creation of a single infrastructure for data exchanges between university researchers.

Thus far, Swiss universities were linked to the European EARN network, which has been on IBM standards since 1983. At the same time, other similar but incompatible systems (including an international Unix network) were established. The responsible academics, refusing to continue playing the game of multiplying access points, have therefore decided to replace the current formula with a homogeneous system supporting the OSI model. The new national university network will be called Switch and will eventually become the Swiss branch of the revised and improved international EARN network.

Even if it is obsolete, EARN remains one of the rare examples of an open network that functions well on the Old Continent and even from one continent to another. It still handles data communications between 50,000

researchers of 350 academic institutes in 21 countries throughout Europe, Africa, and the Middle East. It is interconnected with similar networks in Canada, the United States, and Japan.

Since its creation in 1983, EARN has had financial support from IBM. From 1988 onwards, Digital Equipment will take over, supporting EARN's move toward an OSI-modeled architecture. The assistance announced officially at Telecom 87 concerns hardware, software, supervision of the project, and access to DEC knowhow regarding the OSI network.

25068